20-1025 (Lead); 20-1138 (Consolidated)

UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

ENVIRONMENTAL HEALTH TRUST, et al.,
CHILDREN'S HEALTH DEFENSE, et al.,
Petitioners,

v.

FEDERAL COMMUNICATIONS COMMISSION,
UNITED STATES OF AMERICA,
Respondents.

PETITION FOR REVIEW OF FINAL ORDER OF THE
FEDERAL COMMUNICATIONS COMMISSION

AMICUS BRIEF OF BUILDING BIOLOGY INSTITUTE IN SUPPORT OF PETITION FOR REVIEW OF FINAL ORDER

ADDENDUM

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Declaration 1: Riun Ashlie
Radio Frequency Exposure Case Study

My name is Riun Ashlie. I am a certified ElectroMagnetic Radiation Specialist (EMRS) based in Lafayette, Colorado, primarily serving the eastern slope of the Rockies within the state. Upon request, I have travelled to Texas, Oklahoma, Kansas, New Mexico, and Arizona to support clients in need of my services.

Since my certification in 2015, I've tracked an averaged 50% increase in my business per year. Approximately half of my clients are referred to me through medical professionals. An estimated 95% of my clients experience and suffer from ElectroMagnetic Hypersensitivity.

I currently work with approximately four clients per week.

Over the past five years, I've observed first-hand numerous clients whose lives have been severely disrupted and impacted by ElectroMagnetic Radiation.

I will offer you three case studies as examples.

Case Study 1:

The client lived in an apartment on the 4th floor of a large multi-building complex in Broomfield, CO. He was male, approximately 30 years of age, with no prior awareness of nor experience with ElectroMagnetic Hypersensitivity.

He was an electronics engineer who had previously served in the military.

The client reached out to me, expressing concern that (in his own words) "something funny was possibly going on in his apartment," and he suspected a cell tower nearby. In my initial consult, I inquired about the location of the cell tower in proximity to his dwelling. The client estimated that the cell tower was a distance of approximately one mile from his apartment.

During my onsite inspection at his apartment complex, I immediately observed that the cell tower was fixed to the roof of a nearby commercial building. It was only 400 feet away from his apartment building. The cell tower installation was concealed within vertical cylinders, so they were not readily identified by the general public.

Upon entering his apartment, I explained to him the location of the cell towers. He was immediately surprised. As part of my assessment, I measured the ElectroMagnetic Radiation levels in the client's upon. We were both very shocked at the results.

Radio Frequency Radiation (RFR) levels measured in power density ranges from 200,000 to 300,000 microwatts per meter squared. The client's Wi-Fi was

turned off during my in-home inspection, so the Radio Frequency levels were derived from all external sources.

As I explained on the physiological symptoms and biological effects at these very severe levels of exposure, I noticed that the client was having difficulty to not cry. He was in shock. And he proceeded to tell me about the physical and social damages since his occupancy. He expressed that he'd been living in the apartment for approximately six months, and in that time, he became concerned that he was "losing his mind." He had recently checked himself into the emergency room at a nearby hospital because he was hearing loud noises within his skull. And he had not been sleeping for months. He explained that most difficult symptom he had been experiencing was that he was beginning to lose his ability to convey his thoughts coherently in attempting to have even the simplest of conversations.

This has also detrimentally impacted his social life and relationships. He stated that when his girlfriend came to visit him, she would immediately get a headache as she stepped out of the 4th floor elevator, while approaching his single bedroom apartment. As a consequence, she no longer was willing to come and visit him.

The client asked me what steps he should take to remedy this situation? I advised that he should no longer spend any time in, nor live in, his apartment. He took my advice, and he departed the building, only returning to recover his belongings.

When I left his apartment, I apologetically mentioned that unfortunately for his cats, they would have to stay in the residence until he could relocate to a new apartment. The client contacted me approximately three months later via email, having realized what I meant about his cats. He told me that since our initial consult, one cat had died, while the other cat was sick and dying. Fortunately, having removed himself from the high radio frequency environment, my client himself was feeling significantly better, both physically and mentally.

This client represents one of the more extreme exposure cases that I have encountered in my professional career as an ElectroMagnetic Radiation Specialist. However, it is clear that there are hundreds of thousands of residents who continue to dwell in apartments with extremely high-level radio frequency exposures around the country.

Further, I have assessed numerous apartments and offices where cell towers are installed on the outer walls or on rooftops. In all of these scenarios, the clients have been significantly impacted by overexposure to Radio Frequency Radiation.

It is readily conceivable that there are likely hundreds of thousands of similar scenarios throughout the United States.

Case Study 2:

This case concerns a husband and wife from Edwards, CO, over the duration of a year and a half. The wife had been suffering from health challenges. As a result, she contacted me to perform an ElectroMagnetic Radiation assessment of their residence.

Upon the initial in-home assessment, I measured Radio Frequency Radiation levels in the master bedroom at 48 microwatts per meter squared.

Upon returning 18 months later for follow-up work in January, I re-measured the Radio Frequency Radiation levels in the master bedroom.

This follow-up measurement recorded 120 microwatts per meter squared.

When I cited the change, the wife reflected on this and discussed these findings with her husband, in my presence. She noted that Verizon service trucks had been driving past their home during an upgrade on a cell tower approximately 1 mile away from their home. She asked her husband if he could recall when the Verizon service trucks had stopped driving through their residential area. He was certain that Verizon had completed their work and were no longer driving in the area by mid-December. This was the month before I arrived to re-assess their property.

The wife immediately stated that her heart rate variability tracking monitor had flagged sleep disruption, starting in the middle of December, and she had not recovered as of my late-January on-site assessment.

While the client in my first case study did not have any monitoring devices to notify him of a change in his physical health, he nonetheless recognized his own symptoms of a health decline as a result of his environment. The client in this second case study had the benefit of a heart rate variability meter to notify her that an anomaly in her environment had occurred. At very low radiation levels, that anomaly nonetheless triggered sleep disruption for the client.

To mitigate the changed environment in the client's bedroom, I suggested the client install a Radio Frequency Radiation shielding bed canopy around her bed, to reduce the levels in her sleep space. She is now back to sleeping normally after installing and implementing the shielded bed canopy.

The critical point to understand from these two case studies is the following: there are likely hundreds of thousands of individuals with severe health effects from extremely high RFR exposure levels in their living and work spaces. Additionally, millions of Americans experience mild-to-moderate symptoms at significantly lower

Radio Frequency Exposure levels. Scientific research indicates biological impacts to humans occur at extremely low levels of RFR exposure.

Case Study 3:

This third case study illustrates an important data point. In this scenario, the client contacted me for an RFR inspection of her home and yard, because she felt something had changed in her environment.

She noticed that the wildlife no longer visited a water feature she had made.

During my on-site inspection, I assessed the ambient Radio Frequency levels within the property lot. I discovered that Wi-Fi had been installed in her small guesthouse.

The intensity of RFR emitting from the Wi-Fi in the guesthouse permeated an area on her property, which included the water feature in her yard.

When the client understood the significance of this impact on the wildlife, she asked me if these RFR levels could also impact her bees swarming and leaving their hives.

I had not been aware that she had bees or previously had beehives. I asked her where the hives were located. The hive stands were still present, so I measured the RF power density at their location as 75 microwatts per meter squared.

The client explained the behaviour of the bees. She observed them repeatedly over the course of several weeks. She described that as the bees flew out of the hive, it appeared as though they were immediately "struck" by something, and they would fall to the ground. She observed that they wouldn't die, but they would always reorient themselves. However, once upright, they would always fly in a vector directly opposite to the direction of the Wi-Fi from the guesthouse.

Insects and birds are encountering dramatically high radio frequency radiation levels on a daily basis. Studies and communications listed below show that bees are being impacted in harmful and fatal ways. The potential impact is of concern to the entire planet.

- https://ehtrust.org/published-research-adverse-effect-wireless-technology-electromagnetic-radiation-bees/
- https://ehtrust.org/science/bees-butterflies-wildlife-research-electromagnetic-fields-environment/
- https://ehtrust.org/epa-birds-bees-trees-5g-wireless-effects/

The three case studies presented herein highlight the subtle, overt, and insidious threats from radio frequency radiation to all humans, insects, birds, and wildlife. It is of primary concern that we as a society begin to comprehend the global impact of this man-made radiation, and to assess the impact of global RFR on all living beings.

Sincerely,
Riun Ashlie, EMRS

Neural Vitality Networks
Lafayette, CO

I declare under penalty of perjury that the foregoing is true and correct.

Signed Riun Ashlie

Print Name Riun Ashlie

Date August 2, 2020

Street Address 145 Zinnia Circle

City, State Lafayette, CO

Zip Code 80026

Declaration 2: Cathy Cooke
Radio Frequency Exposure Case Study

My name is Cathy Cooke. I received my dual certification as an Electro Magnetic Radiation Specialist (EMRS), and Building Biology Environmental Consultant (BBEC) from the Building Biology Institute (BBI) in Santa Fe, New Mexico. I am also a nutritional health coach, with extensive experience supporting clients in achieving optimal health.

Over the past two years, I have helped numerous clients reduce their exposure to Radio Frequency Radiation (RFR). On a weekly basis, I receive testimonials about the positive health improvements family members notice after implementing RFR reduction and mitigation.

As a professional expert in the field of ElectroMagnetic Radiation Exposure, I am specifically concerned about the Radio Frequency Exposure, (RFE), effect on children and their developing bodies and brains.

The following is a case study of nine-year-old Avery:

I was hired to do an ElectroMagnetic Frequency, (EMF), assessment for Rachel, mother of four young children in Boise, Idaho. Multiple individuals in her family experienced health problems, but Rachel was specifically concerned about her eight-year-old daughter, Avery who suffered from daily headaches and had never slept through the night since she was born. Although Rachel's husband, David, had a decent paying job, raising four children inevitably generated a significant financial strain on the family unit. As a lower middle class family in Boise, ID, they could not afford family health insurance, as it was cost prohibitive.

Avery struggled with schoolwork, focus, and mood fluctuations due to her daily headaches and poor sleep. As her health declined, Rachel and David became extremely concerned about her. With their small amount of disposable income, Rachel and David took Avery to be evaluated by doctors who unfortunately did not have any answers nor solutions.

During my on-site EMF inspection at Rachel and David's house, I used my Gigahertz Solutions HF59B Radio Frequency Meter to take measurements in Avery's bedroom. The meter readings showed that Avery was consistently exposed to 2,200 uW/m2 (microwatts per meter squared) of Radio Frequency from the Wi-Fi router and the "smart" television. The family was unaware that the television was emitting any Radio Frequency signals.

To mitigate, I unplugged the television, and I suggested they buy a new television that does not emit a Radio Frequency signal, or simply keep their

existing television unplugged. Additionally, I suggested that the family hard wire their Internet connection with Ethernet cable, as this provides a faster, more reliable and secure connection, while eliminating Radio Frequency inside the home. They did not have the financial means to hard wire at the time of my inspection, so they unplugged the Wi-Fi at night, and they kept it unplugged when it was not being used.

Upon post-testing after mitigation, with the "smart" television and Wi-Fi both unplugged, the Radio Frequency levels significantly dropped to 35 uW/m2.

The day after my EMF assessment, with the family continuing to keep the television and Wi-Fi unplugged, Rachel emailed me to say that Avery slept through the night for the first time in her life. They eventually hardwired their home Internet with Ethernet.

Since practicing these remediation steps Avery no longer gets daily headaches and her focus, attention and moods have all improved dramatically.

Avery's story is not unique.

I see scenarios like this, along with positive mitigation results on a weekly basis.

If Avery had not had the keen attention and concern of her parents, she would have continued to suffer physically, emotionally, and socially, stuck in a downward, continuing cycle of ever increasing poor health, like so many others who experience the same.

She may also have been prescribed pharmaceuticals with potentially dangerous side effects, which would not have addressed the core problem for her health decline.

I declare under penalty of perjury that the foregoing is true and correct.

Signed cathy.cooke

Print Name Cathy Cooke

Date 7/26/2020

Street Address 688 N. 29th St.

City, State Boise, ID.

Zip Code 83702

Declaration 3: Dave Green
Radio Frequency Exposure Case Study

My name is Dave Green. I am a certified Electromagnetic Radiation Specialist (EMRS) and Building Biology Environmental Consultant (BBEC). I have been practicing in the Great Lakes Region of the Midwest for the last 3 years from Lapeer, Michigan.

What follows is a personal account of a client's direct experience with Radio Frequency Microwave Radiation Exposure, and her development of a condition called "Electromagnetic Sensitivity" (sometimes referred to as "ElectroMagnetic Hypersensitivity"). The client, Jane, a retired accountant, is approximately 60 years of age.

Over the course of a few months, I performed on-site ElectroMagnetic Frequency (EMF) inspections, assessments, and mitigations in Jane's home in Southeastern Michigan.

I requested that she write and share a personalized account of her experience, since her first-person narrative is more compelling than my professional summary and report.

I have included direct excerpts from her summary document below.

Jane writes, *"Skin burning…red face when working in front of the computer, and severe insomnia, anxiety, and buzzing in my head while I was in my bedroom. The buzzing in my head was so maddening at times I thought this was an extreme form of torture. The insomnia plagued me for years with no relief to the point I would think the only relief I would get would be from death. I would sleep for 2 hours, wake up sweaty, and toss and turn. When I would finally fall asleep and then when I would wake up I would have no energy. I would have no desire to do anything, because I am so fatigued that all I can do is sit in a chair. I went to many doctors for this problem. I was prescribed the usual pills for depression, and sleep aids, all to no avail.*

Nail biting…anxiety when I would sit in the Great Room. I would constantly chew on my fingernails! My husband would ask, "Can you please stop chewing on your fingernails?" I would reply, that I would chew off my fingers if I could…the urge was that great!! I also had nausea and ill feelings in the kitchen."

Peer reviewed clinical research studies on the biological effects of Radio Frequency Exposure has found, though not limited to, the following:

- an over stimulation of the sympathetic nervous system,
- opening of the blood brain barrier,
- voltage gated calcium channel (VGCC) activation and the subsequent formation of the Peroxynitrite molecule, which is a potent inflammatory agent in the body.

Upon my inspection, I discovered that Jane's exposures to Radio Frequency Radiation, (RFR), came from multiple sources and locations, both inside and outside her house. External sources included: wireless security cameras, neighbors' Wi-Fi routers, Radio Frequency broadcasting gas and electric meters, and a cell tower (the strongest source) that was within 600 feet of the house.

Internal sources are frequently the strongest exposure sources due to distance and the physical proximity inside the home. Jane's home had interior wireless security cameras in the basement, a Wi-Fi router in the computer room, a computer broadcasting Radio Frequency to the wireless router, a Bluetooth printer, smart televisions, and a smart water meter (in the basement) with a transmitting antenna that sent data miles away to the water department.

To measure the Radio Frequency Exposure (RFE) levels in Jane's home, I used Gigahertz Solutions HF59B & HFW59D Meters, using Omni-Directional Antennas. I data logged the Radio Frequency levels with Gigahertz Solutions NFA 1000 & NFA 400. Pre-mitigation levels ranged from ~30,000 $\mu W/m^2$ (microwatts per square meter) in the computer room with Wi-Fi, computer, printer and television all turned on; ~2000 $\mu W/m^2$ in the bedroom; and 100 – 200 $\mu W/m^2$ in the great room and in the kitchen.

I employed mitigation measures to reduce the Radio Frequency Radiation levels in Jane's home. These measures included:

- Hard wiring all computers and televisions;
- Removing any device that broadcast Radio Frequency Radiation;
- Painting select rooms with Radio Frequency-blocking Y-shield paint in the following locations: Jane's bedroom walls and ceiling, the two exterior walls in the computer room, the kitchen ceiling and exterior wall facing the cell tower. For Electric Fields, grounded the paint to an exterior dedicated ground rod.
- Radio Frequency-blocking window film was applied to windows in Jane's bedroom, bathroom, and computer room.

The post-mitigation assessment showed the Radio Frequency Exposure levels in all areas and rooms to be significantly decreased, and ranged from 10 $\mu W/m^2$ to 30 $\mu W/m^2$.

Jane summarizes: "With all of the changes that were made, I can now say that my skin is no longer burning in the computer room. I feel less anxiety and I now have long nails. Most importantly I am getting longer and more consistent sleep.

My bedroom has a calmness to it now. But I still have some buzzing in my head that comes and goes and varies in intensity and sound because the world that we live in is still surrounding us with WiFi!"

On completion of the job, Jane's husband gave me a big hug because of the reduction in his wife's symptoms and the positive effects the changes had on their relationship. Both feel extremely grateful for my help in getting some normalcy back into their lives by lowering the Radio Frequency Exposure in their home.

I declare under penalty of perjury that the foregoing

is true and correct.

Signed_____*Dave Green*_____

Print Name_____*Dave Green*_____

Date_____**July 26, 2020**_____

Street Address 2556 Hadley Rd

City, State Lapeer, Michigan

Zip Code 48446

Declaration 4: Lawrence J. Gust
Radio Frequency Exposure Case Study

My name is Lawrence Gust, founder of Gust Environmental. I am certified as a Building Biology Environmental Consultant (BBEC) and a certified ElectroMagnetic Radiation Specialist (EMRS) through the Building Biology Institute (BBI). I also hold a BS in Electrical Engineering and a MBA from the University of Wisconsin. I am currently a teacher at BBI, and I am president of their Board of Directors. I live and work in Ventura, California.

Since 1993, my company Gust Environmental has served clients in the US, Canada, Europe, and Oman. We specialize in complete assessment of indoor environmental health factors from the perspective of the ever-increasing human sensitivity to environmental toxins. I have evaluated and recommended remedial measures in over 1,700 residential and commercial buildings. I also consult on the environmental aspects of the construction and remodeling of a homes and offices.

This Case Study is of an upper middle class family living in Chicago, Illinois in a single family home. The married couple Michele and Bruce, and their children Teddy, Poppy and Charlie were all extraordinarily and negatively affected by Radio Frequency Exposure (RFE) levels in their home. Upon professional inspection, the RFE was found to be sourced from internal devices installed by the client and from externally sourced wireless communications radiations.

Background

The current FCC guidelines on radio frequency radiation (RFR) exposure limits for the public under Rule 19-126 are inadequate to protect the public. For 25 years certified Building Biologists in the United States and Europe have been hired to evaluate residences because the people living in those residences have significant health complaints. Within the last 20 years as cell phones and their infrastructure and other wireless communications devices became ubiquitous, these health complaints more often than not correlated to the level of RFR exposure inside the residence. These health complaints radically affected quality of life and cause significant suffering. In all cases, levels of RFR found in these residences were orders of magnitude less than the FCC standard. When RFR levels were reduced further, health more often than not improved significantly.

The current roll out of the new 5G wireless communication system to support the Internet of Things has required moving 4G antennas from widely distributed antennas on 100-foot towers, to residential streets on 20 foot light poles, and adding 5G high-frequency antennas to these poles. All in close proximity to houses and bedrooms. This is placing more and more people at risk of damaging RFR exposure.

Certified practitioners trained by the Building Biology Institute are boots on the ground. They see a growing number of people, including children, who are suffering. Our practitioners measure the RFR levels, and if excessive, recommend means of remediation to reduce exposure. They see the beneficial results from reducing RFR exposure.

This Case Study is of an upper middle class family living in Chicago, Illinois in a single family home. The married couple Michele and Bruce, and their children Teddy, Poppy and Charlie were all extraordinarily and negatively affected by Radio Frequency Exposure (RFE) levels in their home. Upon professional inspection, the RFE was found to be sourced from internal devices installed by the client and from externally sourced wireless communications radiations.

Original Home on Chicago's North Side

Prior to calling a Building Biologist to investigate, the clients became suspicious of the RF energy from the approximately fifteen wireless routers[1] spread throughout the house as part of their "Smart Home." The family had been living in this house with high RFE levels for four years, before calling for a professional RFE assessment. Over those four years, their symptoms became increasingly more severe.

In the words of Michele, the mother:

> *"My family became very ill with many different mystery symptoms several years ago (~2012). We all suffered from many and different complaints and we were busy trying to address each of those individually with very little success. One symptom we all shared is that we were increasingly sensitive to more and more foods. The list was ever changing and impossible to manage. Eventually we tried eliminating what seemed like everything: gluten, dairy, soy, corn, nuts, eggs, sugar, caffeine, alcohol, and sugar to start and eventually green beans, potatoes, onions, coconut, pineapple and even apples. Everything seemed to give someone a tummy ache or headache or*

make them rush to the bathroom. Everyone was bothered by something different so it was almost impossible to make a normal meal that everyone could eat.

My eight years old daughter had started to vomit uncontrollably at night, sometimes for hours. The doctors had no answers for us, saying that little girls often have tummy aches. It was absolute hell. We would sit on the floor beside the toilet sometimes for six hours at night while she threw up repeatedly, even when there was nothing left in her tummy.
Then she developed arthritis. She would twist her ankles, wrists, hips and neck to try to get relief. She was diagnosed with idiopathic, poly-articular, juvenile arthritis, which translates to swelling and pain in multiple joints in a child with an unknown cause.
It seemed like her system was on fire as her gut and her joints were inflamed and painful. She had always been healthy-looking and had a glowing complexion, but her complexion became pale. She had circles under her eyes and she was in constant pain in her joints and tummy.

My ten years old son had brain fog, difficulty concentrating, and mood issues. He began to have difficulty getting along with his friends at school. He began to lose control of his bowels and did not know when he needed to go and would soil himself. I found his journal and in it he said, 'I have no friends, I poop my pants and I want to kill myself.'

This child had always been very healthy and happy. He was extremely smart, meeting all of his milestones early. He had a great sense of humor.
He had always had an easy time making friends and getting along with everyone.

Now his little life was inexplicably falling apart. He was always angry, hated school, had trouble getting along with others and couldn't eat the foods he used to enjoy.
A psychologist diagnosed him with "negative affect" and ADHD symptoms. Like the rest of the family, he also began to have more and more food intolerances.
He began to be called "Allergy Boy" at school. He also suffered from constant sinus infections. It was suggested that something was affecting his nervous system so that his digestion system was not properly regulating, causing the food intolerances and bowel issues but no one knew what that something was.

My four years old son was the least affected, but he often complained that he didn't sleep. Even though I would check on him in the night and he would be sleeping, the next morning he would say, 'Mummy, I don't sleep anymore.' He began to be irritable and difficult as if he was not getting enough sleep despite his early bedtime and good nap schedule.
It was as if something was preventing him from getting into a deep restorative sleep.

My husband, Bruce, was diagnosed with Hashimoto's Encephalopathy. He suffered from brain fog, difficulty concentrating, memory problems, extreme irritability, bad moods, gut issues and difficulty sleeping. He says today that there were six months that his cognition was severely impaired and during this time he does not remember anything.
He had to rely on others at work during that period. He remembers his all-consuming fear that he would not be able to keep his job.

My symptoms included brain fog, difficulty concentrating, rashes on my face, vertigo, difficulty sleeping, horrible dreams, racing heart, heart palpitations, gut problems, Fibromyalgia - type body pain, and chronic fatigue.

Eventually, I began getting symptoms which I traced to using my cell phone and computers. If I used a cell phone, I would lose the vision in my right eye, get heart palpitations and become dizzy and disoriented. I could also feel it burning my hand. Driving to our many doctor appointments became terribly challenging because I couldn't use the phone GPS.
If I did, I would feel ill. I had such bad brain fog all the time that without GPS I would get lost. Because these effects were clearly related to radiation from communications equipment,
I began to research Electrical Sensitivity and realized it could be caused by EMF Exposure.

This was all burning into my consciousness when I took the children to Michigan for six weeks in the summer. In that home, all of our symptoms went away. We had no Wi-Fi in that house. However, my husband stayed in the house in the city to work and his symptoms did not improve. I finally got suspicious that our house was making us sick."

Initial Investigation by a Building Biologist

Michele had their home assessed for Radio Frequency Exposure by a local, more novice Building Biologist in mid-summer 2013. The magnitude of RF Energy inside the house was troubling. The RFE was traced to fifteen wireless (Wi-Fi) Routers that were part of the "Smart Home" system serving four floors of the house. These Routers were disconnected prior to the Building Biologist's arrival. However, based on prior experience, Lawrence J. Gust estimated that the radiation from the wireless Routers in the house would have been in the range of 50,000 to 100,000 $\mu W/m^2$ depending on proximity to individual router locations. While the RF power density level was certainly reduced in the house, the family's symptoms continued after that Router mitigation.

It is useful to note that the total RF power density (wireless routers plus externally sourced RF radiation) was in the range of 60,000 to 110,000 $\mu W/m^2$ (0.6 to 11 $\mu W/m^2$).

This level of exposure is 0.6% to 1.1% of the current FCC safety standard C95.1-1991, yet is still responsible for harmful symptoms and extended suffering of an entire family as reported below.

Investigation By Lawrence Gust, Building Biologist

Because of the family's continued severe symptoms, they contacted me, a senior Building Biologist, in September 2013, to perform a full assessment of the home. As part of my thorough investigation, I assessed the house for Mold, Volatile Organic Compounds (VOCs) and ElectroMagnetic Fields (EMF) (power system Magnetic & Electric Fields and Radio Frequency).

My investigation showed that there were no issues with Mold, VOCs, Power System Magnetic or Electric Fields. However, I did discover that the house was being affected by multiple communication antenna arrays located at the top of several high rise buildings grouped one block away to the East. The buildings North and South of the home were multi-story concrete structures that blocked a great deal of the RF Radiation from those directions.

Radio Frequency Power Densities Levels–Original Home

Area	**Low-** **$\mu W/m^2$**	**High** **$\mu W/m^2$**	**Low-** **$\mu W/cm^2$**	**High-** **$\mu W/cm^2$**
1st Floor Living	200	4000	0.02	0.4

2nd Floor Bedroom & Office	3000	8000	0.3	0.8
3rd Floor Rear Kid's Bedrooms	200	400	0.02	0.04
Mother's Office/Craft Room	--	6000	---	0.6
4th floor Deck	11,000	33,000	1.1	3.3
Basement Area, Open to 1st Floor	200	700	0.02	0.07
Basement area, Protected	18	63	0.0018	0.0063

The FCC Safety Guidelines for Maximum Permissible Exposure (MPE) ANSI/IEEE C95.1 is 10,000,000 µW/m^2 (1000 µW/cm^2), 1500 MHz to 300 GHz. It is useful to note that RF power density was previously reduced from an estimated 60,000 to 110,000 µW/m^2 to 200 to 8,000 µW/m^2 from external communications sources.
This level is 0.002% to 0.08% of the current FCC safety guideline C95.1-1991, yet this exposure continued to be responsible for devastating symptoms and suffering of an entire family as reported above.

For the client's house emergency measures were immediately enacted to reduce sleep time exposure for the parents and children by moving them to a storage room and to the guest bedroom in the rear of the basement where the RF power density was approximately 18 to 63 µW/m^2 (0.0018 to 0.0063 µW/cm^2).
RF shielding tents were ordered for each of the children's beds. Each tent, which is estimated to reduce the RFE levels by a minimum of 95%, was suspended from the ceiling over the child's bed. The RF power density range inside the tent over the children's beds was measured to be in the range 10 to 40 µW/m^2 (0.001 to 0.004 µW/cm^2).

Michele Explains

"As a short term measure, Lawrence J. Gust suggested that we get rid of our Tesla car, remove all wireless from our house, hard wire our computers, use our landlines as much as possible and sleep in our basement as the RFE was much lower there. For a week or so our three children slept on a blow up mattress in the basement tool room (way at the back of the building) and my husband and I slept in the basement guest room (also at the back of the building). We ordered RFE protective bed canopies, and the children were able to move back to their bedrooms with those.
My husband put a canopy in the basement guest bedroom and slept there as it felt so much calmer there. Sometimes during the day, I would go down to the basement and get inside the tent to calm my system down. I felt immediate

relief there from headaches and the general feeling of fight or flight that I had developed.
These canopies gave us temporary relief at night, but the location of the house made it prohibitively expensive to mitigate and reduce the RFE to a level that would allow us to heal. We realized that we needed to move out of our beautiful new home. We found an old house in the suburbs and moved. We carbon painted all the bedroom walls and hardwired all technology. We switched our children to a school that did not have Wi-Fi throughout."

The New Home in Evanston, IL.

The client chose to purchase a new home in an area with lower ambient RF levels. These levels were measured before any shielding was done.

Areas of the house	**Low-** **µW/m²**	**High-** **µW/m²**	**Low-** **µW/cm²**	**High-** **µW/m²**
1st Floor Living area	11	20	0.0011	0.002
Master suite	12	50	0.0012	0.005
2nd Floor Kid's Bedrooms	20	33	0.002	0.0033
Mother's Office/Craft Room	---	50	---	0.005
Guest Apartment	---	43	---	0.0043
Outside Courtyard	---	70	---	0.007

To mitigate the RF levels in the new house, the bedrooms were shielded against external RF by painting the walls and ceiling with *Y-Shield* crystalline carbon-based RF blocking paint. RF blocking film was applied to single pane window glass in each of these rooms. This action significantly reduces sleep time RF Exposure in all bedrooms by at least 95%.

Michele Comments on the Changes

"We felt better in the new house. Our allergies and intolerances began to go away and we could eat normally again. The brain fog and depression lifted. My daughter's vomiting and arthritis went away. My older son's moods and focus got better.

My little one could sleep again. My husband's cognition and focus returned.

But we did not immediately get over our EHS symptoms.
We still had trouble traveling or going to restaurants or public buildings with strong Wi-Fi.

Eventually we all become less and less sensitive. Today we are very cautious about EMF exposure including RF, but we no longer feel them unless we are in a very strong RF environment."

Additional Background Information:

What Happens to People Who are Exposed to Radio Frequency Radiation (RFR)

The following is a collection of eleven case studies reporting client experiences dealing with the effects of Radio Frequency Radiation (RFR) over a range of power densities and RFR sources. There is no typical client for a Building Biologist. The case studies from eleven clients reported below cut across a range of ages and income levels.

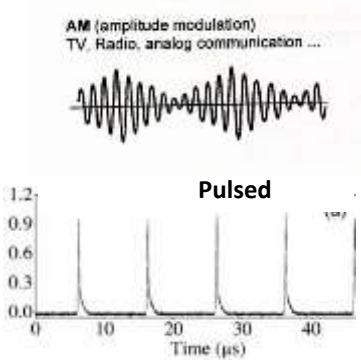
It should be noted that in the 2015 appeal to the UN and WHO, now supported by 221 qualified scientists from 41 countries, the risks of electromagnetic fields emitted by telecommunications were stated as uniformly high. It does not matter if the source is 3G, 4G, 5G cell systems, the cell phone, Wi-Fi, cordless phone, Apple TV, Roku, or other any other pulsed RFR sources.
https://www.iemfa.org/emf-scientist-appeal-to-the- united-nations/

All of the case studies herein are from individuals certified through the Building Biology Institute as an *Electromagnetic Radiation Specialist and/or a Building Biology Environmental Cons*ultant. This certification and what is required to attain it, are described elsewhere in this brief.

Instruments Used and Why

These Building Biologists used Total Power Density RF meters made by *GigaHertz Solutions, GmbH* in Germany. The data from these meters is recognized by medical and legal authorities in Germany. The primary meter used in these assessments was the HFE59B, with a frequency range 27 MHz to 3.3 GHz, and sometimes in addition, we used the HFW59D meter with a frequency range of 2.4 to 10 GHz to extend the frequency range of the

measurement into frequencies that the wireless service providers have recently or will soon be using.



These meters measure *peak* power density not *average* power density (as used by the FCC). The use of average power density made sense before 1980 because the most common signal was *analog*. That is, there was a signal present all of the time, not just a series of energetic pulses with long, no-energy spaces in between. Using *average* measurement of digital (pulsed) signals is meaningless as explained
below.

Today, nearly all signals are digital—meaning the signal is zero in amplitude (i.e. strength), except when it is a strong, very short pulse, essentially the antithesis of an analog signal. Average measurement designed for analog signals of yesteryear cannot "see" digital signals.

Thus, purely from a physics perspective, one must use a peak measuring meter to accurately detect and quantify digital signals.

A significant number of years ago the EMF research community switched to evaluating digital RF strength with peak meters to better assess biological health effects. This was an important change because there is a much higher correlation between health effects and digital RF exposure when one uses peak measurement.

The logic of the *Peak* vs. *Average* measurement argument is illustrated by this analogy:

- If someone shoots you with a high power rifle bullet traveling at about 700 meters per second, the bullet once it enters your body takes about 50 microseconds to tear your body apart.
- Then a regulatory agency says you don't need to worry about that because the average force (power density) of the rifle bullet over a 21 day period (21 days is about 10,000,000,000 times longer than 50 microseconds), is so low, the bullet cannot possibly harm you.
- If you take a typical RF data pulse lasting for 60 billionths of a second and average it over a 6 minute period, as do the FCC exposure

guidelines, the average strength or power density is so very low that it "seems" to be inconsequential, when, in fact, the power pelting the body (bullet) is quite strong.

For Building Biologists who are working with real clients and using peak measurements to quantify the actual real world situation, the relationship between radio frequency exposure and biological effects is fully apparent as the following eleven stories will attest. These health affects exist because the real world has moved well beyond the obsolete, crude analog/average thermal effects paradigm upon which the FCC safety standard is based.

In all cases reported here, the peak RF power (density) levels needed for symptom abatement– and to end suffering– are far below the FCC guidelines that use the average power density level. The use of average significantly underplays the actual power level experienced by the human body from moment to moment. Even with the tremendous minimizing advantage of using averaging, these outdated FCC safety guidelines do not come close to protecting people from significant suffering, declining health and sometimes suicide.

Protection from Wireless Radiation

These case studies show that people are adversely affected by this radiation. Given how busy building biologists across the country are serving clients who have been negatively affected, it seems reasonable that the number of affected individuals is large and growing rapidly based on the increase in requests for our help.

The considerable cost of creating a livable environment that will be free of the pain and suffering caused by these radiations is shifted to the sufferer while the cell phone companies make a profit. In fact, it is so costly that the majority of the population may not be able to afford to shield their homes.

The radiation in homes and apartments from the new network of small Wireless Telecom Facilities of 4G/5G systems, which include enhanced 4G antennas, accelerated, steerable, beam forming 5G antennas, installed on every residential street (about every 8 to 10 houses or approximately every 1000 feet) will be very strong–100,000 to 400,000 $\mu W/m^2$– and require the highest performance shielding materials.

Additionally, the highest performance shielding material may not be adequate to reduce the power density to a livable level because the neighborhood 4G/5G system power density is so very high.

People could shield each bed by installing a RF shielding tent over the bed. However, in the case of strong 4G/5G radiation, people will likely need to shield the room itself as well as tent the beds. This is because of unavoidable RF leakage in the tent and in a structure retrofitted with shielding. For example, 99% shielding effectiveness allows 1,000 out of 100,000 $\mu W/m^2$ to enter the house, where the BioInitiative Report recommended level is under 60 $\mu W/m^2$.

Cost for RF Tents

Shielding the parent's queen size bed with a RF protection tent starts at $1,250 for moderate shielding capability and reaches to $1,700 for shielding of strong radiation.

Shielding a child's single bed will cost $1,000 to $1,400 depending on the level of protection needed.

A family with two adults and two children, would have to spend $3,200 to $5,500.

Costs for RF Shielding of Bedrooms

Building Biologists focus on sleeping areas because this is where people are most vulnerable to RFR, but this offers no protection to people who are home all day like a mother with young children who don't want to or cannot stay in their bedrooms all day. (And this does not even address the exposure of people who want to enjoy their back yard.)

People can shield the bedroom itself by painting the walls with RF protection paint and putting RF protection film on the windows instead of tenting the bed. The cost for painting including labor is about $3.15/ft^2$. For an average 12' x 12' bedroom with two 3' x 4' double hung single pane windows, the cost is $2,450.

A family of two adults and two older children in separate bedrooms would have to spend $7,350.

Cost of Bedroom Protection Against the Intense 4G/5G Antennas on the Street

That family of two adults and two older children who need both RF tents and bedroom shielding would have to spend $12,850 (if that would actually work given the power density of neighborhood 4G/5G radiation).

Cost of Whole-house Protection from RF Radiation

While not always possible depending on the nature of the siding used on the house, the cost of applying RF protection paint to the average existing 2000 ft^2 house by painting outside stucco walls and the inside ceilings on the top floor is $14,000.

If the house was older than 1990, the windows would need to be shielded with RF protection film. With an average of one window per 100 ft^2, this house would have 20 average 3'x 4' windows and would cost $2,900 to shield.

Total cost for shielding the average 2000 ft^2 house is $16,900.

Our eleven case studies are drawn from the field experiences of six certified Building Biologists.

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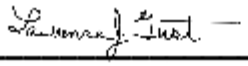
Total cost for shielding the average 2000 ft^2 house is $16,900.

The following eleven case studies are drawn from the field experiences of six certified Building Biologists.

I declare under penalty of perjury that the foregoing is true and correct.

Signed 

Print Name Lawrence J. Gust

Date August 1, 2020

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City, State Ventura, CA

Zip Code 93003

Declaration 5: Stephanie Sage Kerst
Radio Frequency Exposure Case Study

My name is Stephanie Sage Kerst. I am a certified ElectroMagnetic Radiation Specialist (EMRS), and I am the founder of Sage Living. Through my business and community, I work with homeowners throughout California and New Mexico, as well as several school districts in California. I assist clients in identifying, assessing and mitigating four types of ElectroMagnetic Fields (EMF): AC Electric Fields, AC Magnetic Fields, Radio Frequency (RF) & Dirty Electricity. My business is based in Menlo Park, California.

Five years ago, it was rare for me to speak with someone who knew about the potential adverse health effects of Radio Frequency Exposure, (RFE). Today, I receive at least one inquiry per day from someone seeking advice and professional services to reduce the RFE in their home.

What follows below is the account of Alexander, an 8-year-old child in an upper middle class family from Menlo Park, California. Alexander is sensitive to very low levels of Radio Frequency Radiation. He experienced a significant improvement in his health when his bedroom Radio Frequency Exposure (RFE) levels were reduced using RF shielding materials and methods.

Alexander had a two-year history of debilitating headaches which started at the age of 5. Initially, the frequency of headaches occurred about 3-4 times per year. Alexander's family moved to a new home when he was 7 years old, and within a few weeks of the move, the frequency of his headaches increased to once every two weeks.

He was taken to his pediatrician for evaluation and help when the headaches first started. The pediatrician referred him to a neurologist who confirmed the diagnosis of Abdominal Migraine. Abdominal Migraine is a form of migraine seen primarily in children. It is most prevalent in children ages five to nine years old, but can also occur in adults. Symptoms of Abdominal Migraine include abdominal pain, vomiting and nausea. It may or may not include head pain.

As Alexander's headaches continued, his family was referred to a second neurologist who confirmed the initial diagnosis and recommended an MRI to rule out a brain tumor. The MRI results were normal. Luckily, this child did not have a brain tumor, but his headaches continued.

Alexander's headaches were debilitating. He would curl up on the floor in the fetal position and sob in pain for several hours. Sometimes the pain was so intense that he vomited. Other times, he cried until he fell asleep. The episodes

predominantly occurred in the evenings. Most of the time, he would sleep for 12+ hours after a headache.

The headaches were agonizing for Alexander and his family, both physically and emotionally. His neurologist did not recommend preventative medication due to the mixed results on its effectiveness and the possible side effects. Over-the-counter medicine like ibuprofen did not relieve his symptoms. He was prescribed Zofran for the nausea, but it did not improve his symptoms. Alexander's parents struggled to find ways to help their son.

Alexander would often ask his parents, "Why me? Why can't we make these headaches go away?"

Even with health insurance, his parents estimate that they spent at least $3,000 out-of-pocket to treat Alexander's continuing headaches over this period of several years. Alexander's parents knew about the research surrounding the impact of Radio Frequency Radiation, (RFR), on biology and health. Reaching the end of their viable choices offered by traditional medicine, they decided to call upon a Building Biology Certified Electromagnetic Radiation Specialist (EMRS / BBEC) who specialized in measuring and assessing electromagnetic fields.

Alexander's bedroom was measured to assess RFE using a Gigahertz Solutions HF59B RF Meter with a UBB27 Omni-Directional Antenna. The initial measurements were 50 µW/m² (microwatts per square meter) on the bed pillow which falls into the "Severe Concern" range according to Building Biology guidelines(1). The main RF source was from the neighbor's Wi-Fi network.

50 µW/m² is a fairly low measurement of RFE, especially in an urban environment. It is not uncommon to measure 50,000 µW/m² of RF Radiation in a typical urban home. Scientific studies have shown that children are more susceptible to the effects of RFE than adults. Further, there are numerous scientific studies reporting headache (2,3,4,5,6,7,8,9,10,11) to be a principle symptom related to RFE, including a study on children and adolescents by Heinrich (2010) who reported headaches in children at 30 – 200 µW/m². Thomas (2008) reported headaches in adults at 50 – 400 µW/m² exposure levels.

The rest of Alexander's home measured at very low levels of RF (~ 10 µW/m²), a level not requiring mitigation. There were no cell towers nearby, and the home was 100% hardwired for Internet use and has very few wireless devices.

Remediation of Alexander's bedroom included installation of two types of RF shielding: Curtains were made with a single layer of Swiss Shield Naturell fabric for the two windows in his room. A panel of Aluminum RF Shielding Foil was applied to the back of the headboard on his bed. RF measurement after shielding

was 6 μW/m^2 (an 88% reduction) which is of "Slight Concern" according to Building Biology guidelines.

It has been six months since the RF shielding was installed in Alexander's room, and his headaches have not recurred. He is an active, healthy boy who loves running and playing soccer with his friends. To say Alexander and his family are elated is an understatement.

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I declare under penalty of perjury that the foregoing is true and correct.

Signed _____

Print Name STEPHANIE S. KERST

Date 07/27/2020

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City, State MENLO PARK, CA

Zip Code 94025

Declaration 6: Liz Menkes
Radio Frequency Exposure Case Studies

My name is Liz Menkes, and I am a certified ElectroMagnetic Radiation Specialist (EMRS) and Building Biology Environmental Consultant (BBEC).
I am the owner of EMF Healthy based in Walnut Creek, California.
I have given talks on ElectroMagnetic Exposure (EME) on health at the LiveAware conference in San Francisco, the Marin County Health Advisory, Santa Clara County Medical Association, as well as local organizations and college classes. The demand for my consulting services has increased dramatically over the past five years, as more people are affected and become aware of the health hazards associated with EME.

Below are three Case Studies from my work with clients over the years.

Case Study 1: Andrea

Andrea is a 76-year-old, middle class woman who lives in a townhouse in Napa, California. She contacted me because she was experiencing severe cognitive difficulties with word retrieval. For approximately ten years, she had found herself grasping for common words while giving professional presentations. Despite consulting with many integrative doctors and trying many different treatments over the years, she had found no answers and no solutions to her cognitive problems.

I went to Andrea's home for an on-site ElectroMagnetic Frequency, (EMF), assessment on May 9, 2018. I took readings with Gigahertz Solutions' HFE59B and HFW59D Radio Frequency Meters. The chart below details the measurement results, first with all of Andrea's wireless devices on, and then with all of her wireless devices off.

Radio frequency: in microwatts per square meter (uW/m^2)		
Location	**Readings with devices on**	**Readings with devices off**
Kitchen	9,000	112
Kitchen	2,600	66
Family room	14,500	62
Dining table	5,500	42
Computer area	20,000+	265
Guest bedroom	6,500	6,500

Master bedroom	2,000	1,500
Master bath	N/A	675
Guest bath	N/A	940
Bluetooth in car	1,200	
Andrea's cell phone	15,000	

My inspection found extremely high levels of Radio Frequency Exposure (RFE) throughout her townhouse, primarily from her wireless router in the family room, but also from wireless devices in the neighbor's adjoining townhouse. According to Building Biology Precautionary Guidelines, the range for "Extreme Concern" is > 1,000 uW/m^{21}.

By temporarily turning off all of Andrea's wireless devices inside her townhouse, we were able to achieve substantial reduction in exposures. However, high exposures still remained in the master bedroom from the wireless devices in the adjoining townhouse.

In order to mitigate, Andrea made the following changes:

- Turned off wireless function on her router
- Hardwired her computer and turned off Wi-Fi and Bluetooth on her computer
- Purchased and used a hardwired mouse and keyboard at her computer
- Purchased and used a corded phone (AT&T CL4940)
- Hardwired the television with an Ethernet cable
- Purchased and used a shielded bed canopy, made from SwissShield Naturell (reduces exposures over 98%)
- Minimized cell phone use
- Turned off Bluetooth in her car

The cost for this remediation totaled $2,297 ($1,622 for bed canopy and $675 for an IT company to help with hard wiring).

The Building Biology Precautionary Guidelines recommended for sleep areas is for less than 10 uW/m^2 ("Slight Concern"). While the Radio Frequency Exposure levels

in the rest of the home did not reach this goal, overall they were sufficient in most rooms for daytime exposure. The master bath, guest bath and computer area remained
with high exposures (Building Biology "Severe Concern" range[1]),
but Andrea did not spend much time in these rooms.

About a month after making the recommended changes, Andrea reported that her word retrieval had significantly improved.

Andrea had the following to say about reducing her exposure to wireless devices:

> *"I am a writer with an excellent vocabulary, so when my ability to retrieve words was compromised, I thought it must be my age – 76 years old. But it made it almost impossible to write if the required word would not issue forth from my brain. In addition, my brain felt foggy, slow and no longer agile.*
>
> *Enter Liz Menkes who found that the EMF readings in my condominium were off the charts. She recommended a cage of fabric for my bed which I now happily sleep in, feeling protected and safe. She also recommended ways to eliminate wireless exposures from my living areas, such as Ethernet cable for my computer and television. After only a month, I felt like my old self! My brain functioned better and it felt clearer. I felt younger and quicker. This was a HUGE boost to my self esteem, not to mention how I function in life."*

About a year after implementing these changes, Andrea contacted me, reporting that her word retrieval problems had returned. We discussed her use of technology, and she told me she had recently been given a Fitbit. This wearable device emits a Radio Frequency Pulse every second or so. I recommended that she stop using it. After about two weeks without the Fitbit,
Andrea reported that she no longer experienced the retrieval issue.

On a more recent occasion, Andrea called me to report that once again,
the word retrieval issue had resurfaced. We yet again reviewed her current use of technology. She said that with the COVID-19 shelter in place restrictions, she had started using her cell phone more often (about 1 to 1 ½ hours a day). During my initial inspection,
I had measured her cell phone at about 15,000 uW/m^2 at a two-foot distance (Building Biology "Extreme Concern" range[1]).

I recommended that Andrea stop using her cell phone, unless it was urgently needed. Andrea complied and reported that after about two weeks, her word retrieval issue once again resolved.

Numerous peer-reviewed studies show cognitive impairment from Radio Frequency Exposure at low levels[2,3,4,5,6,7,8,9,10,11]. Zwamborn et al[11] reports decreased cognition at 1,300 uW/m2. Hutter, et al[3] reports concentration difficulties with exposures as low as 6 uW/m2 – 128 uW/m2.

Case Study 2: Barbara

Barbara is a 72-year-old, middle class woman in St. Helena, CA. She lives in a small cottage on the same property as her larger home, which is now rented out. She moved from the large house to the smaller cottage about a year ago. Around the same time she started experiencing a significant decline in her cognitive functions. As reported to me, she had constant "brain fog," such that she would loose track of her thoughts mid-sentence and had difficulty following simple instructions that contained more than one step. Barbara is a strong, independent and energetic woman. Her family thought that her cognitive decline was more than what might be expected from the normal aging process.

For an on-site inspection, I visited Barbara's home on May 20, 2019. I took readings with Gigahertz Solutions HFE59B and HFW59D Radio Frequency Meters.
My inspection revealed extremely high levels of Radio Frequency Exposure (RFE) in the areas where Barbara spent most of her time during the day.

The reading in the family room (at Barbara's favorite spot on the couch) was 49,000 uW/m^2. The reading at the dining table was 37,000 uW/m^2. The Building Biology Precautionary Guideline level of "Extreme Concern" is greater than 1,000 uW/m^2.[1]

The sources of these high exposures were the wireless devices in the home, including: a cordless phone next to the couch, an Apple TV, Apple booster and wireless router. In addition, Barbara had a wireless laptop that she used during the day. She also liked to take the laptop with her to bed when she went to sleep. She would "surf the net" for a couple of hours, then fall asleep with the laptop next to her.

We temporarily turned off all these wireless devices, and the levels in the home dropped to 4 uW/m^2. This was wonderful, as ideally, we like to see levels less than 10 uW/m^2
in the sleeping areas (Building Biology "Slight Concern"[1)].

Barbara's daughter was present during this assessment. When she saw the readings and understood how serious they were, she wanted to move forward with immediate remediation.

In order to mitigate, Barbara made the following changes:

- Permanently unplugged the cordless phone and ordered a corded replacement
- Turned off the wireless function on the router
- Unplugged the Apple TV and Apple booster until they could be hard wired
- Hard wired Barbara's laptop
- Turned off the wireless function on the router

Additionally, I advised Barbara not bring the laptop to bed with her. Barbara also had a cell phone which measured about 18,000 uW/m^2 at about two feet away from her. I advised her to keep it turned off and only use it when she was away from her home and needed to reach someone urgently.

Cost for the remediation was about $100 for a new home phone and various components for hard wiring. Barbara's family did the hard wiring themselves.

I spoke to Barbara about a week later, and she happily reported that the day after my inspection, she woke up with no brain fog. She told me she could not believe how good it felt to "have her brain back." She was extremely grateful to have found a resolution to this issue.

About a year after the assessment, I spoke to Barbara again. She said the improvements had lasted until a few weeks ago. We discussed her current use of technology. She told me she had started keeping her cell phone turned on and near her all the time in order to receive emergency fire notifications. I had measured her cell phone at about 18,000 uW/m^2 at about a two-foot distance when I was at her home. We discussed alternatives, but at the time of our conversation, Barbara did not feel she could reduce her cell phone usage.

There are numerous scientific studies that show cognitive impairment from exposure to radio frequency at low levels.[2,3,4,5,6,7,8,9,10,11]

Zwamborn et al[11] reports decreased cognition at 1,300 uW/m^2.
Hutter, et al[3] reports concentration difficulties with exposures as low as 6 – 128 uW/m^2.

Case Study 3: Cynthia

Cynthia is a 60-year-old high school English teacher who lived in an apartment in Berkeley, California. She called me about five years ago because she was experiencing a number of symptoms, including:

- Difficulty sleeping. In the three years she lived in her apartment, she never slept well. She had trouble falling asleep and would wake up multiple times during the night.
- Fatigue. A deep fatigue would come over her, lasting a couple of hours, where she felt like she could not even hold up her head.
- Memory issues. She could not remember things from a couple of days ago,
- and she often felt a fair amount of confusion.
- Burning sensation in her face and body.

The fatigue and memory issues had been worsening over the past couple of months. The burning sensation had become more frequent; and she would notice it almost as soon as she walked into her apartment.

I did an on-site assessment at Cynthia's small, single, third-floor unit apartment on March 7, 2015. I took readings in various areas of her apartment with a Gigahertz Solutions HFE59B Radio Frequency Meter with a UBB27 Omni Directional antenna. Cynthia had no wireless devices in her home.

The following readings were all from external sources:

Radio frequency (in uW/m^2)	
Location	**Readings**
Desk	18,000
Bathroom	21,000
Bed	36,000
Kitchen	20,000

The source of the Radio Frequency Exposure was primarily coming from a cell tower located about 900 feet from Cynthia's apartment. The levels measured in

every room of Cynthia's apartment are considered in the Building Biology "Extreme Concern" range[1] of over 1,000 uW/m^2.

Reducing the radio frequency exposures in her apartment to recommended Building Biology guidelines of less than 10 uW/m^2 ("Slight Concern" range[1]) would be very difficult. Shielding products such as paint or window film can block over 99% of radio frequency, but there are always little nooks and crannies where Radio Frequency **Signals** can get through. At best, she might get a 90% reduction inside her apartment, but the resulting Radio Frequency Exposure levels in the apartment would likely remain in the Building Biology "Extreme Concern" range[1]. My recommendation to Cynthia was to move out of her apartment.

Cynthia never spent another night in that apartment. She also found that it was becoming increasingly difficult to be in her classroom. There was a wireless access point directly over her head in the front of the classroom. Cynthia had started getting the burning sensation almost as soon as she walked into her classroom. Two weeks after the assessment of her apartment, Cynthia left her job, as she could no longer be in her classroom. She described her experience over those few weeks as "being ejected from my life."

There are numerous peer-reviewed studies that report difficulty sleeping, fatigue, memory issues and burning sensation at low levels of exposure to Radio Frequency.[2,3,4,5,6,7,8,9,10] Many of these studies are related to cell tower exposure. For example, Oberfeld et al reported difficulty sleeping, fatigue, and concentration difficulties at exposures from cell towers as low as 6 uW/m^2 – 128 uW/m^2.[2,5]

Cynthia moved out of the Bay area soon afterwards and has lived in various remote areas where there is no cell reception. She said that upon moving away, her sleep and energy improved almost immediately. She had no more episodes of extreme fatigue.
It took a few weeks for her memory to improve. The burning sensation continued to be an issue for her. To this day, she still cannot be near someone with a cell phone for more than 15-30 minutes before she starts to get a burning sensation. Numerous scientific studies of Radio Frequency Exposure from cell phones report symptoms that include burning sensation, difficulty sleeping, memory issues and fatigue.[11,12,13,14,15,16,17,18,19,20,21]

Cynthia's life has been very challenging over the past five years. She is single and does not have family to support her. She has not been able to hold a paying job since leaving her teaching position.

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I declare under penalty of perjury that the foregoing is true and correct.

Signed Liz Menkes

Print Name Liz Menkes

Date 7/25/20

Street Address 191 Camelia Ln

City, State Walnut Creek CA

Zip Code 94595

Declaration 7: Eric Windheim
Radio Frequency Exposure Case Study

My name is Eric Windheim. I am a certified Electromagnetic Radiation Specialist (EMRS) and a certified Building Biology Environmental Consultant (BBEC). I am the owner of Windheim Environmental Solutions, a California high technology, environmental health and wellness company located in the Sacramento, California area with clients worldwide.

I specialize in Electromagnetic Radiation Exposure, providing inspection, assessment, measurement, risk assessment, abatement, and reduction of hazardous Magnetic Fields, Electric Fields, Radio Frequency Wireless Radiation, and Dirty Electricity. I am certified to advise homeowners, home buyers, architects, builders, inspectors, and engineers in the methods and practices that create and maintain a minimized presence of ElectroMagnetic Field Exposure in homes and low-rise commercial buildings.

The following is an account of a 15-year-old boy named Ben from a lower middle class family in Vallejo, California. Ben's high school recommended him to a behavioral psychologist.

Although he had not previously exhibited such signs, his behavior had unusually changed, signifying possible Autism Spectrum. Observation of these changes in Ben prompted the high school to advise that he receive psychological evaluation.

Ben's father contacted me after seeing a public presentation I had given in October 2015. He wondered if his son's behavioral changes might be stemming from possible sensitivity to Radio Frequency Radiation (RFR).

During my on-site assessment at Ben's home in October 2015, I noted three main sources of RFR Exposure in Ben's home. Each of these sources produced peak RFR power density measurements greater than 20,000 µW/m2 (microwatts per square meter), as measured with my Gigahertz Solutions HF59B Meter with the Omni Directional UBB27 Antenna.

The meter and antenna were both in the factory calibration period and less than one year old. Actual RFR power density measurements were much higher, but for sake of economy, they were not measured with additional attenuation equipment.

The measurement results were as follows:

1. X-Box and PlayStation gaming consoles and handheld controls: Greater than 20,000 µW/m2 at waist. Ben used these gaming consoles and devices several hours per day for entertainment.
2. Wi-Fi modem (on 24 hours/day) located directly under and one foot below Ben's bed mattress: Greater than 20,000 µW/m2 at top of mattress and pillow.
3. RFR Transmitting Smart Meter: Produced pulses of 500 µW/m2 to 20,000 µW/m2 at various locations in the house.

For mitigation, my summary suggestions to Brian & his wife Lori for their son Ben were as follows:

1. Prohibit use of X-Box and PlayStation gaming.
2. Remove Wi-Fi from under Ben's bed and replace with Ethernet cable computer connections.
3. Remove Smart Meter and replace with the non-transmitting analog meter.

Brian and Lori were able to effectuate the following changes:

1. Restrict and reduce usage of X-Box and PlayStation gaming.
2. Remove the Wi-Fi from under Ben's bed, move it 20 feet away from the bed, shield it in a commercially-made faraday cage, and turn it off at night.
3. Shield the Smart Meter with a commercially-made Faraday Cage.

The mitigation efforts were successful in reducing Ben's Radio Frequency Exposure inside his home. Upon removal and shielding of several RFR sources, Ben is now back in school doing well.

I declare under penalty of perjury that the foregoing is true and correct.

Signed Eric Lee Windheim

Print Name ERIC Lee WINDHEIM

Date 7-25-2020

Street Address 10 ~~35~~ @ RIVERSTAR CIRCLE

City, State SACRAMENTO CA

Zip Code 95831

Declaration 8: Carey MacCarthy MA, ATR, LPCC

My name is Carey MacCarthy MA, ATR, LPCC. I am a Registered Art Therapist and Licensed Professional Clinical Counselor. As of August 31, 2019 I was forced to resign from Indian Health Services (IHS) in Albuquerque NM where I only worked for 8 months, at the federal level as a Behavioral Health Specialist. I was recently inundated with harmful exposure of Electromagnetic fields (emfs), coming from a cell tower 200 yards from my office window, as well as an electrical power station 100 yards from my office, which overwhelmed my system and has made me sensitive to all wireless technologies and some electronic devices. I received a diagnosis from a medical professional, Dr. Sharon Goldberg MD, of overexposure to microwave radiation, also called Electrohypersensitivity syndrome (EHS). See Exhibit 1.

I have typically been robust in life: an astute professional, published author, lecturer, training facilitator, researcher, a world traveler, entrepreneur, public speaker, outdoors person, etc. In January 2019, two weeks after I relocated to Albuquerque New Mexico for a transfer in the IHS system, I began to bleed heavily (vaginally) and was diagnosed with fibroids (of which I had never had prior to moving to NM). In April 2019, I had finally recovered from the bleeding episode which lasted 1 month, and I was doing great in my work with Indian Health Services at the federal level. In mid-April I began having a burning sensation and nausea in my stomach. I then developed a rash on the left side of my face and under my nose, as well as a ringworm-looking rash on my thighs and buttocks. I had never had problems with stomach issues, nor rashes in my life prior to this. In early May 2019, I started having symptoms of brain fog and headaches, accompanied by weakness and small muscle spasms throughout my entire body. By May 23, 2019 I woke up one morning and noticed that my skin was hot and burning with numbness throughout. My brain also felt like my skin was on fire. I also experienced dizziness and confusion with continued mini muscle spasms throughout my body. At work my symptoms grew worse with constant waves of burning sensations in my skin and brain, with parasthesia (skin numbness), as well as heart palpitations, dizziness, confusion and nausea, and heart palpitations. My hair also began to fall out in large quantities (I have lost 1/3 of my hair, mainly on the sides of my head). I also began getting cysts and burns on my left ear, which is the side of my face that directly faced the electrical power station and my metal earrings were conducting the electricity, causing small burns on the backs and under my left ear. I did not know what was happening to me as I had always been a healthy person. I was terrified. I went to see my provider (who was only a Nurse Practitioner) at Lovelace Medical Center in Albuquerque NM,

where I was tested for several autoimmune conditions, such as Lupus and Sceleroderma, all with negative results. I was not referred to an actual MD. In hindsight, knowing what I know about this condition, I should have been referred to a neurologist.

At first I thought it might be mold in my home but it tested negative for mold spores. That is when I realized it had to be Electromagnetic Radiation form my place of work. I began staying at a friend's home in Albuquerque thinking that it would help to not be in the downtown area, and be able to escape the EMF, though I was still having symptoms when I discovered that the city wide Xfinity network also surrounds their home.

I was already going for a quick vacation, using vacation time at work, to return to my other home in South Dakota, within Black Hills where there is limited cell signal /cell towers, and continued experiencing these symptoms. I discovered a smart meter on my home there. I was horrified, to say the least. I then took sick leave from work as I was still very ill and could not fathom returning to work in this condition, and wanted to go to my trusted doctors/traditional healers there. During this sick leave, I notified my acting supervisor, Dr. Robert Chang, at Albuquerque IHS, who began harassing me with emails questioning the legitimacy of my illness and would not accept the doctors note I provided him, stating he "needed to have the diagnosed condition that was being treated stated from my doctor." This is a HIPAA violation, and he should have understanding of this as a Psychologist and a director. He also requested to see my lab results when I returned to work (which he did demand and actually sat down with me and went over the results), stating that if I did not provide lab results that he would take this to the administration. I contacted Jeff Hemp, Labor Union Rep at Liuna and forwarded him an email from Dr. Chang outlining these egregious requests, whereupon Mr. Hemp stated that it is illegal for Dr. Chang to request such documentation. Dr. Chang also stated that he would need to speak to me "about the future of my position there, that there was no reasonable accommodation if my illness was due to environmental factors".

James Reese, my alternative doctor, who consistently deals with EMF issues, was the one who suggested that EMF may be the issue, and said I had reached my capacity for my body to deal with any wireless technologies as my "barrel is full". He also said that once your "barrel is full" one may experience symptoms forever and becomes extremely hypersensitive to EMFs. This term he was describing is scientifically known as priming and kindling, and is the event in which the limbic system of the brain (part of the mid-brain responsible for the fight/flight response) actually becomes injured in it's inability to cope with high exposures to dangerous stimuli, i.e., EMFS, chemicals, foods, stress, etc, and enters a state of hyperarousal,

which triggers other bodily systems into hyperalert and can create a domino effect of cascading health issues which are "undiagnosable" and seen as "mystery illnesses" within the western medical model. Also some people have the genetic predisposition to these types of issues and I happen to be one of them. So with this genetic predisposition, the priming and kindling occurred in my limbic system after the initial exposure of being bathed in EMFs and electrical fields for months straight. My office was the only office in the entire building directly adjacent to both EMF sources; cell tower and electrical power station.

My brain began to perceive any little stimuli in the environment as toxic, threatening and dangerous and thus, began to react even to the slightest of exposures, rendering me incapacitated. I experienced great difficulty in performing my duties as a therapist to be present for others in their time of need when I was experiencing such severe illness myself. I began to read everything I could on this condition, knowing that his diagnosis was the only one that made sense.

I had to move from my home in downtown Albuquerque NM, and moved to the mountains of Tijeras NM to test if I would get better outside the EMF environment of the city. I still had to work at my position with Indian Health Services 40+ hrs per week, seeing 7 patients per day within the Behavioral Health Department (which was extremely difficult when I was so sick) I began to wear EMF shielding clothing constantly when I was at work or in the city. I bought a Electromagnetic Radiation meter to measure my environments. My office measured "High" and "Extreme" and began flashing "Extreme" = meaning "leave the location immediately." This is the EMF levels I was bathed in for 8 months for 40+ hours per week. My symptoms did not reduce. I asked for an office remediation from my supervisor, having just learned of a website called Less EMF, who specializes in EMF shielding products, where I had purchased the EMF shielding clothing. Dr. Chang said it would be too expensive and he did not know about such things.

As a result of this EMF injury, I have been forced to leave my federal position as a Behavioral Health therapist, as I could not work and see patients in an incapacitated state. Not only am I feeling emotionally and physically traumatized, I am feeling harassed in the workplace by upper management and a supervisor also told me there was no "reasonable accommodation" after 5 days of absence and said he needed to discuss the "future of my position". The Indian Health Services took no responsibility, the cell network did not take any responsibility, nor did the Federal Communications Commission (FCC). The power company took no responsibility. My co-workers also thought I was crazy with one co-worker who had become a friend, ending our friendship. I have had doctors, friends and family members tell me this was all in my head. Before I had this injury, I used to think

people with EHS were a little crazy until it happened to me. Now I now it is a very unfortunate reality.

Mid August 2019, still being very ill with pervasive numb and burning skin, extreme anxiety, skin rashes, hair loss and tachycardia episodes, I had to resign from Indian Health Services as medical leave was not offered to me, with my last day August 31, 2019. I had to relocate back to my home in the Black Hills of South Dakota, where I was still extremely sensitive to any and all cell tower, wifi and electrical exposure. I could feel a cell tower's effect from a mile away before I even saw it. I continued to have pervasive numb skin. When I would go to the nearest town of Rapid City I was instantly affected even with the use of my protective clothing. There was a smart meter put on our home illegally without consulting us first. In October 2019, I was seen by Dr. Sharon Goldberg MD, a top US Medical Doctor specializing in Electrohypersensitivity. I received a diagnosis and I was then able to apply for Workers Compensation, or EComp at the federal level. I also had Dr. Sharon Goldberg compose a letter to the Black hills energy company to demand the immediate removal of the smart meter on medical grounds. She submitted a letter on October 30, 2019, with medical report and research articles citing adverse health effects of smart meters, especially for those with Electrosensitivity. Black Hills energy refused to remove the smart meter from my home and I was eventually forced to return to my California home in February 2020, where there are no smart meters on the home as California power companies provide an opt-out option.

Financial Impact: It has been 10 months since I have been able to work. In moving back to South Dakota, I was supposed to take another position at a Native American Tribal Behavioral Health organization, which qualified me for my continued student loan repayment program, though being as it was in the downtown area, near two cell towers (which would have affected me significantly, with high to extreme readings of EMFs, (according to my RF meter) in an old moldy building, which would have resulted in continuation and possible worsening of my symptoms. I ended up having to decline the position with the tribal organization, resulting in a loss of $24,000 in student loan repayment allocations, when the balance of my student debt was $27,000 and was about to be paid in full after 20 years of outstanding balance. This debt liberation would have allowed me to take out additional loans to begin my doctorate education as a PhD in Neuropsychology. Now I cannot embark on my dream of highest education, as this workplace injury from Albuquerque IHS prevents me from doing so.

Because I could no longer work as a therapist in cities or towns and did not have a home office and was still very ill even at home, I had no choice but to apply for Workers Compensation, called EComp for federal employees. I submitted my

application electronically October 2019. I received confirmation of the receipt of my claim via USPS, dated October 28, 2019. I tried to contact my worker, Greg S. several times via phone with no return phone calls. I called the Director of the Department of Labor in attempts to find out any information and received a call back telling me to call my worker (who was already not returning my calls, which is why I was calling her in the first place). I received a denial letter dated January 17, 2020. I tried calling Greg S. again, with no return call nor any correspondence. I sent an appeal by certified mail on February 5, 2020, requesting a hearing by phone to include myself and Dr. Sharon Goldberg. Around this time I had moved back to California. I called an EComp representative who told me I had a new worker and that he would call me within two business days. She advised I submit a letter to formally change my address to California and I did so on May 1, 2020. I left two messages for the new worker on two separate occasions and did not hear back from him. The Department of Labor then sent a letter dated May 4, 2020, just three days after I had written them to change my address, saying that my request for an appeal hearing was denied, stating that "after the request for a hearing was transferred to the Branch of Hearings and Review…..it has been determined that the case is not in posture for a hearing at this time." It goes on to say that Dr. Goldberg's report was "very difficult to read"……and that the Office did not return the questionnaire which was sent to the Department of Health and Human Services, Indian Health Services in Albuquerque, NM dated May 7, 2020. I received another letter from EComp dated July 1, 2020, giving me 30 days to provide a statement from Dr. Chang regarding my claim. I finally did speak with Greg S. July 16, 2020, who informed me that he originally had accepted my claim though was told by his upper management to change his acceptance to a denial on the grounds that " exposures at the workplace are tricky and there is no proof of exposure" (except for the photos showing the proximity of the power station and cell tower to my office). Greg S. then rerouted me to the Branch of Hearings and Reviews, stating that my case was now in their hands. On July 30, 2020, I spoke with Sherri Doran, Chief of Branch of Hearings and Reviews, who informed me that my case was still with Greg S. and is pending on if I receive a statement back from my former supervisor about the claim. I expressed my concerns about my case being held up base on the negligence of my former supervisors' statement. He is not a medical doctor and has no knowledge of the health implications of wireless technologies/EMF and electrical fields on the human body, therefore it does not seem logical to hinge my workers compensation case on the opinion of one person who has no relevant information . To date, I still have received no further word regarding EComp that I applied for October 2019.

I also applied for Social Security Disability in the state of South Dakota. They sent me a Daily Activities questionnaire, which I completed and submitted. They originally sent two forms though I sent one back. I have never heard from them despite leaving a few messages to Randy, the worker assigned to my case. I never received a denial letter or any status update. That payment should have started in February2020, five months after I applied. I also applied to California State Disability in April 2020, and was denied as I had not applied within 49 days of the injury (because I was still in California waiting for disability and EComp to come through). I then spoke with a representative via phone who said that I would have been denied even if I had applied within the time statute as my income was earned outside California, and suggested I apply in New Mexico, although I no longer live there.

I have been unfortunately living off my retirement and savings, which is disheartening, to say the least, to have to spend my life savings, that would have gone to buying a home and paying off the rest of my student loan debt. Having to allocate my precious and hard-earned resources to survive; basic living costs and exorbitant medical costs in order to heal myself as a result of the injury I sustained within my place of work at Indian Health Services in Albuquerque NM, with no accountability from a single governmental agency, is unjust and indicative of a flawed and broken system.

Total financial losses due to injury to date: $79,200 (salary for 12 months) ; $24,000 (student loan repayment I had to decline); $30,000 (out-of-pocket medical expenses, home remediation, various EMF recovery programs) $50,000 (missed speaking engagements/training opportunities which I regularly did as part of my professional career); $10,000 (book sales, I was in the middle of my Art Therapy curriculum/program launch). Moving costs Uhaul x 2 trips to Tijeras NM and return to Rapid City SD= $1250 Total Loss: $194,450

During the Fall 2019, I spoke with an attorney, Jon LaFleur of Aborincszk Law Firm in Rapid City who specializes in personal injury. In reading through the Indian Health Service Statutes, he clarified that the only recourse I had with IHS is Workers Compensation or EComp. I applied for EComp in October 2019, and it is now July 2020 and I have still been denied and not given an appeal hearing.

I am feeling desperate to regain health and to be able to work again. I am deeply saddened at what has happened to my health and career, and even more saddened at what has happened to the health of this planet because of telecommunication technologies and power grids. I feel trapped by this invisible sickness that the industries call “progress.” We are all guinea pigs in a huge experiment without any longitudinal testing. The use of human subjects in

environmental experiments is illegal according to the International Nuremburg Codes. Even as I write on my laptop (which is connected to internet via Ethernet cable) for the first time in months, as I always used my stationary work computer, I am noticing brain fog, a headache, numb skin and dizziness. My meter reads "moderate" EMF levels coming from the fingerpad. It was reading "extreme" levels before I unplugged the blue tooth mouse (which is now retired). Because of this environmental injury I sustained, my life has drastically changed and I have to monitor every action I take and every where I go. My partner of 5.5 years made comment that he does not understand what I am going through and how he has also been affected. As much as I want to believe he is supportive of what I am going through, there is no doubt that it is very difficult to navigate the uncharted waters when it effects both people's lives. Not everyone experiences EMF related symptoms. I know I sure didn't until this massive exposure to EMF technology from my place of work within IHS in New Mexico.

I am not crazy, I am injured, and there is a broad array of scientific evidence showing the neurological damage resulting from wireless technologies is a scientific fact and not a social opinion. Stringent laws and limitations need to be implemented and enforced in the workplace to keep employees safe and healthy. The study of epigenetics by Dr. Bruce Lipton, PhD, Molecular Biologist, within his book The Biology of Belief has scientifically proven that each cell contains 2% of DNA-governed material and the other 98% is "dark matter" controlled by the environment (Lipton, 2005, p.51) If 98% of the cell is controlled by the environment, and the environment contains large quantities of electromagnetic radiation levels exceeding the "safe levels" deemed by the FCC, this means that 98% of all our human cells is physically responding to these wireless technologies resulting in a variety of manifestations such as neurological impairment, and cancers. Dr. Lipton also posits that these damaged cells pass onto succeeding generations through genetic material (Lipton, 2005, p.51). What our grandparents and parents were exposed to generations back cause health impacts on future generations. What this means is that the current generations who are subjected (with or without their consent) to EMFs and wireless technologies, will potentially transmit damaged DNA to our future generations who will be born with illness or may develop illness over their lifespan. This generation will then pass even more damaged genetic material as they are exposed to EMFs within their lifetimes and continue they cycle. This knows no race, or socioeconomic class….it affects us all. So basically, my DNA was damaged through the misuse and overexposure (without my consent) to EMF at the workplace.

This being said, although there has been extensive damage to my DNA and neurological system, affecting my central nervous system, which has catalyzed

maladapted responses to other body systems within my being, it is still invisible to the naked eye, and invisible in lab tests, though if I had been referred to a knowledgeable Neurologist these abnormalities within my genetic markers, and brain function would have been detected. Doctors are not educated on this ever-growing environmental illness and should be mandated to adhere to performing certain protocols to address such grave health issues, especially with the imminent deployment of even more, and dangerous technologies being launched into space.

Furthermore, when an employee is injured in the workplace, there should be an unbiased checks and balances system and new policies and procedures implemented to ensure that with the ever-increasing technologies within the workplace and within the environment, that higher standards and criteria be developed in order to ensure the health and safety of employees. To date, there are no measures in place to monitor or protect any employee from EMF or Radio Frequency Radiation (RFR) within the workplace. With outdated research and safety standards issued by the FCC regarding safety of RFR and wireless technologies in humans, I believe it is of upmost importance and ethically paramount action to develop and implement strategies, and mandatory protocols to address this rising health crisis reality within the workplace, (and really everywhere). In France, they have outlawed the use of wifi in the schools and preschools, as well as outlawed the placement of cell towers anywhere near these structures, but yet in the US we continue to use wifi in the school system, which has led to suicides in young children who have chronic health issues from these wireless technologies and feel ostracized and are bullied from their peer groups.

With no accountability from a single governmental agency, it is unjust and indicative of a flawed and broken system; a system badly in need of reform. At that time I did not know there was a such thing as building biologists, who are paid specialists who come in and remediate live/work spaces to prevent the types of injuries I sustained. Had I known, and had this been an enforced standard and procedure within OSHA codes, I may have been spared severe illness, having to quit my job, move and extreme financial burden.

Thank you for hearing my story. It is my hope that my story illuminates the health disparities occurring within the workplace as a result of remediable offenses such as EMF exposures. I can only hope for justice in being compensated for so much that I have lost; emotionally, physically, and financially. I can also hope that the Federal Communications Commission, OSHA, Federation of State Medical Boards, Department of Labor, US Department of Education, and other government agencies, take time to read the research and make humane informed decisions to reform their policies and practices so we can make a safer and just world for all.

I attest under penalty of perjury that this statement is true and correct.

Carey MacCarthy
10 Santa Margarita Dr.
San Rafael CA 94901
careymaccarthy@gmail.com
415-947-9608

Signed 

Print Name CAREY MacCARTHY

Date 8/3/2020

Street Address 10 SANTA MARGARITA DR.

City, State SAN RAFAEL CA

Zip Code 94901

DECLARATION OF CAREY MACCARTHY

EXHIBIT 1

GLOW HEALTH, PA

Sharon Goldberg, MD | Internal Medicine

11.13.2019

Re: Carey MacCarthy, DOB 7.3.72

To Whom it May Concern:

I am a Board-Certified Internal Medicine Physician licensed in the states of New Mexico and Florida. Carey MacCarthy is my patient, we have a doctor-patient relationship. I initially saw Carey on October 17th for a new patient visit. Carey sought the evaluation for treatment of electromagnetic sensitivity, which was diagnosed by her primary care physician Dr. Jeanie Lembke. Although Carey currently lives in South Dakota, she traveled to New Mexico to see me, as she was unable to find a local physician experienced in the diagnosis and treatment of electromagnetic field overexposure. Prior to the visit, I reviewed the approximately 100 pages of Carey's medical records that were provided to me. These included Dr. Lembke's notes, as well as her Lovelace Hospital records.

The visit with Carey was a home visit conducted at her temporary residence in Tijeras, NM, lasting approximately 2 hours. Home visits are medically necessary for patients with symptomatic EMF[1] overexposure, as the requisite EMF exposures of a medical office frequently lead to altered vital signs, and often compromise a patient's ability provide a history (they get symptoms mid-visit and can become confused or forgetful). During the visit, I personally took a history, performed a physical examination and diagnosed her with overexposure to microwave radiation (ICD10 W90.8XXA).[2] It is my opinion, based on a reasonable degree of medical certainty, that Carey's work environment was a major contributing cause of this diagnosis.

My medical opinions with regards to Carey's case and diagnosis are offered and explained below. All opinions including the diagnosis, are based on a reasonable degree of medical certainty. My CV is attached for you to review my qualifications to opine on this subject - I am one of small but growing number of medical doctors involved in EMF related medical education, peer-review, research mentorship, and clinical care. I have also attached an appendix to further educate the claim reviewer on this condition. In my experience, very few health care practitioners and administrators are familiar with the large evidence base that validates Carey's symptoms and support her claim for a work-related injury.

An explanation of how I diagnosed Carey and why I correlate the work environment with the diagnosis:

[1] Electromagnetic Field

[2] This condition is historically referred to in the older medical literature as "Microwave Syndrome". For purposes of this letter "overexposure to microwave radiation" and Microwave Syndrome are interchangeable.

Temporality
Carey was in excellent health prior to starting work at Indian Health Services in Albuquerque on 12.26.18. Within the first week at her new office, she developed an impressive array of symptoms. All symptoms are consistent with microwave overexposure but would not have served to make a diagnosis, as there could have been other explanations at that point. As months passed on the job, Carey's symptoms progressed and worsened. Carey noted a clear temporal relationship between time she spent in the office and her illness: Symptoms would improve when she spent time away from the office, but then recur after returning.

What was ruled out
An extensive work up was done by Dr. Lembke to rule out autoimmunity, neurodegenerative disease such as multiple sclerosis or other active medical issues such as a renal or hepatic issue. Age appropriate cancer screening was also performed and was negative. Carey also had her home tested for mold, which was negative.

How the diagnosis is made
Microwave overexposure is a clinical diagnosis. There is no specific laboratory test or imaging study to confirm or exclude the diagnosis - It is entirely based on history and physical exam performed by a qualified clinician familiar with the condition. Carey is an excellent historian and both her history and examination are typical for microwave overexposure. Objective findings and elements of history that support Carey's diagnosis include:

1) Severe orthostatic hypotension despite normal volume status.
2) Evidence of what is likely a skin burn from reflected radiofrequency radiation that developed after she wore metal earrings to work with RF[3] shielded clothing to the office. The ear that faced the cell antenna is the only one that developed the vesicular burn and the scar is still visible. This area remains sensitized to RF exposure.
3) A non-focal neurological exam coupled with a burning, painful, diffuse, otherwise unexplained neuropathy[4] with paresthesia, that she describes as "feels like my skin is covered by a blanket." This description of a burning paresthesia exacerbated by EMF exposure, in a patient with the appropriate history, I see commonly in microwave overexposed patients.

Why the condition prevents Carey from performing her usual and customary line of work
The treatment for microwave overexposure is primarily the prevention or reduction of EMF exposure in the home and workplace.[5] Any other treatments are adjuncts. Unless the environment is "treated" by EMF lowering measures, the patents remain ill. Modern work environments, particularly those in health care that involve direct patient care are problematic for patients with microwave overexposure. This is because the EMF lowering accommodations required for treatment are not possible to realistically provide. In other words, the work environment would not only exacerbate the condition, but it would preclude proper treatment.

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[3] Radiofrequency Radiation
[4] i.e. other conditions to explain a neuropathy like longstanding diabetes, liver disease etc. are ruled out.
[5] Belyaev, I., Dean, A., Eger, H., Hubmann, G., Jandrisovits, R., Kern, M., ... & Oberfeld, G. (2016). EUROPAEM EMF Guideline 2016 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses. *Reviews on environmental health, 31*(3), 363-397.

Examples of the wide variety of devices and EMFs present at Carey's former workplace that would need to be removed from her work area:

1) Wi-Fi is ubiquitous, and presumably industrial strength with signals powered to penetrate concrete.
2) Wireless enabled computers, printers and other devices (keyboard/mouse) – RF emitting.
3) Patients/clients generally arrive with wireless devices and it is unrealistic to expect all patients to follow instructions to turn off their phones before entering Carey's office.
4) In addition to cell phones, patients now often arrive with wearable technology such as smart watches and Fitbits. Many of these devices cannot be turned off.
5) Fluorescent lighting causes VLF (Very Low Frequency) Radiation.
6) Magnetic fields present from neighboring power substation.
7) UNM cell antennae are on rooftops of buildings.

What are the accommodations that would allow Carey to return to work

Provided she recovers sufficiently, she may ultimately be able to work from home, limited hours, with special accommodations to lower the ELF, VLF and blue light emitted by all modern computers. Naturally the computer would have to be hardwired with an ethernet cable and all wireless functions disabled. If ultimately work from home becomes possible, the time limitation is important, because patients with microwave overexposure generally are not able to work long hours in front of a computer.

Regarding the specifics of the accommodations. She would need an office environment that would ensure extremely low levels of ELF, VLF and RF. Colleagues and patients could not have cell phones or wireless devices. Wi-Fi in building would not be an option unless office was shielded. No neighboring cell antennae. The specifics are outlined in the *2016 EUROPAEM EMF Guidelines for the prevention, diagnosis and treatment of EMF-related health problems and illnesses*. Based on my experience in healthcare – these accommodations are not feasible.

Carey has not reached maximum medical improvement

The rate of recovery from microwave overexposure depends on many factors, including:

1) The severity of exposure (power density, time exposed, nature of the frequencies). This information is not currently available and would not change management or prognosis.
2) Individual susceptibility (nutritional status, antioxidant levels, genetics).
3) Patient's ability to achieve low EMF exposure levels in their homes (i.e. having an optimal recovery environment).

The concept of maximal medical improvement in this case needs to be clarified. The biggest treatment goal for microwave overexposure, besides symptom resolution, is for the patient to be able to return to living a "normal" life where they can tolerate some EMF exposure without becoming ill.[6] Patients such as Carey generally require years to reach maximal medical improvement, however there is significant variability in recovery times among patients. It is very well understood among the EMF scientist community and physicians experienced with

[6] See Appendix I

treating EMF associated illness, that no matter how recovered the person is, if you return them to the environment (i.e. a workplace) that made them ill on a regular basis, they become ill again.

Regarding future need for medical treatment
I am not presently able to opine on Carey's future treatment needs. It is important to note that some of the health effects of microwave overexposure are delayed – particularly the neuropsychiatric effects and the increased risk for cancer.[7] Second, I would like to see Carey obtain further work up – with ophthalmology to rule out RF induced eye damage, and an EKG which has not been done. If palpitations continue, then further cardiologic evaluation should be pursued, as RF is clearly associated with heart damage (cardiomyopathy). This testing is not required to make the diagnosis, which is already made. It will be required, however, to answer the question of need for future medical treatment.

Regarding return to work in current line of employment as IHS in Albuquerque
Carey returning to her current line of work in Albuquerque would preclude treatment for the reasons outlined above. Even if Carey were to work in a small rural health center, far from cell towers, that agreed to remove fluorescent lighting, remove Wi-Fi, hardwire all computers, deactivate all wireless functions on computers and get all employees to agree to keep cell phones turned off and not come to work with wearable technology, I don't see how it would be possible to ensure that the patients coming to see Carey would all agree to turn off phones, not bring Bluetooth devices (earphones) or smart watches. Therefore, the needed accommodations are unlikely to achieve.

In sum, my medical opinion is that Carey will not be able to return to work in her current line of employment even after achieving maximal medical improvement, for the reasons outlined in this letter.

Carey is determined to regain her health and return to work in a capacity that will allow her to maintain good health over the long term. It is my pleasure to be involved in her case, please feel free to contact me if you need further clarification or have questions about this case.

Sincerely,

Sharon Goldberg, MD
Voluntary Associate Professor of Medicine
University of New Mexico School of Medicine
Editorial Board Member, *Electromagnetic Biology and Medicine*
SGoldberg@salud.unm.edu

[7] Carpenter, D. O. (2015). The microwave syndrome or electro-hypersensitivity: historical background. *Rev Environ Health, 30*(4), 217-222. doi:10.1515/reveh-2015-0016

Appendix I - Understanding the Ramifications of Microwave Syndrome

In order to recover from microwave syndrome, patients like Carey are forced to effectively "ration" their EMF exposures and minimize their time in public because of the associated exposures. In effect, patients like Carey must remove themselves from public life in order to recover. Because wireless device use is ubiquitous and nearly everyone carries one or more RF emitting devices,[8] simply being around people (and their devices) triggers symptoms. The extent of the resulting social isolation is poorly understood by the general population but important for the claim reviewer to understand.

Examples of situations that trigger/exacerbate symptoms for microwave overexposed patients and are generally avoided:
Movies, plays, sporting events, school events or any event where large numbers of people congregate with their devices.
Commercial travel – airplanes, trains, buses
Shopping – Malls and stores have Wi-Fi and are full of customers carrying and using their wireless devices.
Accessing health care – hospitals, doctor/dentist offices, ambulances (now have Wi-fi)
Accessing essential public services - courtrooms, public office buildings, libraries
For children or college age students – there are many cases of inability to access an education because of mandatory exposure to EMFs (Wi-Fi, smart boards, laptops/tablets) and the presence of multiple cell phones from other students.

Understanding the physical nature of microwave overexposure:
In most cases, microwave overexposed patients like Carey develop an expanded sensory perception for electromagnetic fields in the non-ionizing radiation range (3Hz-300 GHz). In other words, when they drive in a car or walk down the street they can feel when they are approaching a cell antenna or other EMF source if it is one of the frequencies they are reactive to/perceptive of. The specific frequencies one perceives depends on many factors, including previous overexposure to that frequency, genetics, nutritional and overall health status. Therefore, this is not a case of a person seeing a cell tower or another person's cell phone and then having a fear-based reaction. These patients become perceptive to fields that non overexposed patients do not perceive physically. This serves as a protective mechanism for microwave overexposed individuals enabling them to avoid noxious exposures. There are well established biochemical and electrochemical mechanisms in the medical literature to explain these processes.

[8] Cell phones, smart watches/Fitbits, earphones or other Bluetooth enabled devices, tablets, laptops etc.

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Licensure

New Mexico, MD2018-0541, 6/15/2018-7/1/2022
Florida, ME110505, 7/7/2011-1/31/2021
DEA Registration, FG3573208, 9/11/2018-9/30/2021

Certifications

American Board of Internal Medicine, 2000-present
American Board of Integrative Holistic Medicine Diplomate, 2012
Certificate in Plant Based Nutrition, T. Collin Campbell Foundation/eCornell, 2011
Certificate in Traveler's Health, International Society of Travel Medicine, 2006

Educational History

- **DTM&H,** April 2005, Cayetano Heredia University Gorgas Memorial Institute of Tropical Medicine, Lima, Peru
- **MD,** May 1997, Tel-Aviv University/Sackler School of Medicine, Ramat-Aviv, Israel
- **BA,** May 1992, Smith College, Northampton, MA, Biological Sciences

Employment History

- Independent Consultant in the field of nutritional and environmental influences on chronic disease, Miami, FL, July 2015-February 2918. Santa Fe, NM, March 2018-present.

- Integrative Internal Medicine Physician, July 2015-February 2018, Glow Health P.A., Miami, FL. June 2019-present, Santa Fe, NM.

  Integrative Internal Medicine in a solo practice (Miami) and currently in a part time home visit practice model. Partner with patients to identify root causes of illness via an integrative/functional approach. Formulate personalized treatment plans to address root causes of illness. Treatment includes dietary modification, nutritional supplementation, and other lifestyle interventions such as reducing adverse environmental exposures, with the goal of helping patients optimize health and avoid/reverse illness.

- Assistant Professor of Medicine/Hospital Medicine Physician, August 2011-July 2015, University of Miami Miller School of Medicine, Miami, FL

  Attended on medical inpatients at the University of Miami and Jackson Memorial Hospitals on teaching and non-teaching services. Supervised medical students and residents in all aspects of inpatient care including medical wards and medical consultation service. Performed preoperative evaluations in high-risk medical patients at the UHealth Preoperative Assessment Center. Performed inpatient medical consultations at Bascom-Palmer Eye Institute, University of Miami Hospital, and Jackson Memorial Hospital.

  Committee/service roles included: 1) Nutrition Advisory Committee, University of Miami (2012-2015) and 2) Medical Advisory Board for the UHealth Medical Wellness Center, University of Miami (2014-2015).

- Assistant Professor of Medicine/Hospital Medicine Physician, October 2006-June 2011, Beth Israel Medical Center/Albert Einstein College of Medicine, New York, NY

  Directly cared for medical patients as clinician educator, supervising house-staff and medical students on the Beth Israel Medical Center medical inpatient units, the medical consultation service and the Phillips Ambulatory Care Center.

  Established and maintained a weekly travel/tropical medicine clinic at the Phillips Ambulatory Care Center/Infectious Diseases Faculty Practice from March 2009-April 2011 providing outpatient pre-travel care, as well outpatient and inpatient post-travel care for ill returned travelers.

  Integrative medicine related activities included: (1) Physician champion for the inpatient acupuncture program/spearheaded the effort to make acupuncture consultation available for medical inpatients; (2) Developed and implemented pre-discharge nutrition education for cardiac patients; and (3) Managed oncologic inpatients on the 9 Dazian Integrative Oncology Unit. Integrative modalities available via consultation included: acupuncture, yoga, meditation/breathing techniques, and music therapy.

  Committee involvement included: 1) Pharmacy and Therapeutics, Beth Israel Medical Center (2009-2011) and 2) American Board of Internal Medicine – the committee charged with resident performance evaluation at Beth Israel Medical Center (2007-2011).

- Hospital Medicine Physician, July 2001-February 2005, The Mount Sinai Hospital, New York, NY. Instructor in Medicine July 2001-April 2004, Assistant Professor of Medicine, May 2004-February 2005, Mount Sinai School of Medicine.

  Attended on medical inpatients at the Mount Sinai Hospital, both on teaching and non-teaching services. Supervised medical residents and students in all aspects of inpatient care. Precepted residents at Internal Medicine Associates, the resident outpatient clinic for Mount Sinai Hospital. Performed medical consultations on surgical, obstetric, and other non-medical services. Lectured regularly at noon conferences to resident, medical student and nurse practitioner groups.

- Resident, Internal Medicine, Beth Israel Medical Center, New York, NY, July 1998-June 2000
- Intern, Internal Medicine, Jacobi Hospital, Bronx, NY, July 1997-June 1998

Employment History (Locum Tenens)

- Attending Physician, June 2006-August 2006, V.A. Medical Center, Bath, NY (Locum Tenens)

  Provided primary care to adult outpatients.

- Attending Physician, August 2005-November 2005, V.A. Outpatient Center, Farmington, NM, (Locum Tenens)

  Provided primary care to adult outpatients.

- Attending Physician, February 2001-May 2001, William F. Ryan/Nena Community Health Center, New York, NY (Locum Tenens)

  Provided urgent care/primary care to underinsured population, including large population of HIV positive individuals.

- Attending Physician, December 2000-February 2001, Outpatient Clinic, V.A. Medical Center, Martinsburg, WV (Locum Tenens)
  Provided primary care to adult outpatients. Supervised well women's clinic.

- Attending Physician/Hospitalist, July 2000-August 2000, V.A. Medical Center, Spokane, WA (Locum Tenens)
  Served as inpatient medical attending to general medical, telemetry, and ICU patients. Provided medical consultation services to non-medical services. Performed all necessary procedures, including central line placement, thoracentesis, and lumbar puncture.

- Analytical Chemistry Laboratory Technician, October 1992-April 1993, Taro-Vit Pharmaceuticals, Herzilya Pituach, Israel
  Performed assays on generic pharmaceuticals using high performance liquid chromatography (HPLC) and mass spectroscopy. Testing was primarily to determine product stability and purity.

- Lahr Fellow, June-August 1990, United States National Arboretum, Washington, D.C.
  Summer fellowship working in the Native American Plants section of the U.S. National Arboretum. Prepared thesis on medicinal Native American plants indigenous to the region.

Memberships in Professional Societies

Society of General Internal Medicine
Academy of Integrative Health and Medicine
Society for Integrative Oncology
Institute for Functional Medicine

Other extramural professional activities

Peer Review

- Editorial Board Member, *Electromagnetic Biology and Medicine*. 2/4/2019-present
- Peer Reviewer, *PLOS Medicine*, 2014-present

Medical Advisory Roles

- Medical Advisory Board Member, We Are the Evidence, New York, 2018-present
- Medical Advisory Board Member, Global Alliance for Brain and Heart Health, Halifax, Nova Scotia, 2017-present

Invited Lecture

September 2019, EMF Conference Scotts Valley, CA, EMF Effects: Neurologic and Cardiometabolic. www.EMFC.com

Short narrative description of research, teaching and service interests

Given the soaring incidence, prevalence and cost of chronic disease, I believe that we must examine novel approaches to therapeutic lifestyle change with the aim of improving healthcare outcomes.

Research Interest

I want to test the hypothesis that lowering exposure to ubiquitous manmade electromagnetic fields (EMF's) present in patient's homes will lead to improved health outcomes and cost savings. Specifically, I am planning small, proof of concept interventions in patient cohorts with selected conditions (diabetes and obstructive sleep apnea are of particular interest because of the prevalence and cost) to pave the way for larger scale grant funding.

A study visit would assess the participant's home for each of the four EMF's linked with adverse health outcomes: 1) AC Magnetic fields, 2) AC electric fields,3) Microsurge Electrical Pollution (MEP), and 4) Radiofrequency Radiation (RFR). Then after measurements are taken, fields are remediated with a focus on the sleeping areas. Although this sounds complicated, it is actually quite straightforward. I have professional meters, am trained and experienced with the assessment protocols, and well versed in the options for home remediation of these fields.

Certain homes have EMF elevations that cannot be easily remediated, for example elevated AC magnetic fields from external power lines. Most of the findings I see in my home visit practice, however; such as elevated AC electric fields, MEP and RFR in the home, are highly modifiable by simply flipping off a fuse to a bedroom (AC electric and MEP), and/or turning off devices that emit RFR when not in use. Sometimes just moving the bed across the room and away from a source of electric or magnetic field is all that is necessary to significantly lower an exposure and improve previously intractable symptoms like fatigue, headache or insomnia.

EMF remediation research is a new concept. I am not aware of any medical school working in this field, likely because of the limited cross talk between doctors and engineers. Other exciting features include:

1) Inter-Departmental – pilot studies can be designed for many different conditions, some outside the scope of general medicine, therefore many potential funding angles are possible. Examples include congestive heart failure, recurrent epistaxis, neuropsychiatric conditions (including cognitive impairment and multiple sclerosis), migraine/chronic headaches, sleep disorders such as OSA and diabetes.

2) Reproducible and cost effective – If intervention proves effective, community health care workers could be trained to perform the assessments and larger scale programs could be implemented in urban or rural areas at relatively low cost.

3) Interdisciplinary – Ideal collaborators would be from schools of engineering, public health, and economics.

Teaching and Service Interests

These include integrative medicine approaches to primary care issues: dietary and nutritional modification, exercise, mind-body approaches, and other forms of therapeutic lifestyle change/environmental modification to improve and maintain health.

Scholarly achievements

Original research or scholarly articles in refereed journals

- McDaniel, H. R., LaGanke, C., Bloom, L., **Goldberg, S.**, Hensel, J., Lantigua, L. A., ... & Lewis, J. E. (2019). The Effect of Broad-Spectrum Dietary Supplementation on Quality of Life, Symptom Severity, and Functioning in Multiple Sclerosis. *Journal of dietary supplements*, 1-15.
- Lewis, J. E., Atlas, S., Abbas, M., Rasul, A., Farooqi, A., Lantigua, L., Lages, L., Michaud, F., Gobbo, L., Higuera, O., Fiallo, A., Tiozzo, E., Woolger, J. M., Ciraula, S., Sneij, R., **Goldberg, S.**, Mendez, A., Rodriguez, A., & Konefal, J. (2019). The Novel Effects of a Hydrolyzed Polysaccharide Dietary Supplement on Immune, Hepatic, and Renal Function in Adults with HIV in a Randomized, Double-Blind, Placebo-Control Trial. *Journal of dietary supplements*, 1-13.
- Karhu, E., Atlas, S., Gao, J., Mehdi, S., Musselman, D., **Goldberg, S.**, Woolger, J. M., Corredor, R., Abbas, M., Arosemena, L., Caccamo, S., Farooqi, A., Konefal, J.,Lantigua, L., Padilla, V., Rasul, A., Tiozzo, E., Higuera, O., Fiallo, A., & Lewis, J. E. (2018). The effect of intravenous infusion of magnesium sulfate on cardiovascular, liver, kidney, and metabolic function in adults. *Journal of Clinical and Translational Research, 4(1)*, 2. doi: 10.18053/jctres.04.201801.002.
- McDaniel, H.R., LaGanke, C., Bloom, L., **Goldberg, S.**, Lages, L. C., Lantigua, L. A., Atlas, S. E., Woolger, J.M., & Lewis, J. E. (2018). The Effect of a Polysaccharide-Based Multinutrient Dietary Supplementation Regimen on Infections and Immune Functioning in Multiple Sclerosis. *Journal of Dietary Supplements*, 1-16. doi: 10.1080/19390211.2018.1495675.
- Lewis, J. E., Atlas, S., Higuera, O., Fiallo, A., Rasul, A., Farooqi, A., Kromo, O., Lantigua, L., Tiozzo, E., Woolger, J. M., **Goldberg, S.**, Mendez, A., Rodriguez, A., & Konefal, J. (2018). The Effect of a Hydrolyzed Polysaccharide Dietary Supplement on Biomarkers in Adults with Nonalcoholic Fatty Liver Disease. *Evidence-Based Complementary and Alternative Medicine. 1751583,* 1-10. doi: 10.1155/2018/1751583.
- Karhu, E., Atlas, S. E., Gao, J., Mehdi, S. A., Musselman, D., **Goldberg, S.**, ... & Caccamo, S. (2018) Intravenous infusion of magnesium sulfate is not associated with cardiovascular, liver, kidney, and metabolic toxicity in adults. *J Clin Trans Res,* 4(1), Epub ahead of print.
- Sanders, B., Ray, A., **Goldberg, S.**, Clark, T., McDaniel, H.R., Atlas, S.E., Farooqi, A., Konefal, J., Lages, L., Lopez, J., Rasul, A., Tiozzo, E., Woolger, J. & Lewis, J. E. (2017). Anti-cancer effects of aloe-emodin: A systematic review. *J Clin Trans Res, 3*(4), 1-14.
- Lewis, J. E., Atlas, S. E., Rasul, A., Farooqi, A., Lantigua, L., Higuera, O., Fiallo, A., Laria,L., Picciani, R., Wals, K., Yehoshua, Z., Mendez, A., Konefal, J., **Goldberg, S.**, & Woolger, J. (2017). New method of sudomotor function measurement to detect microvascular disease and sweat gland nerve or unmyelinated C fiber dysfunction in adults with retinopathy. *Journal of Diabetes & Metabolic Disorders*, *16*(1), 26.
- Mehdi, S., Atlas, S., Qadir, S., Musselman, D., **Goldberg, S.**, Woolger, J. M., Corredor, R., Abbas, H., Arosemena, L., Caccamo, S., Campbell, C., Farooqi, A., Gao, J., Konefal, J., Lages, L., Lantigua, L., Lopez, J., Padilla, V., Rasul, A., Ray, A., Simões, H., Tiozzo, E., & Lewis, J. E. (2017). Double-blind, randomized crossover study of intravenous infusion of magnesium sulfate versus 5% dextrose on depressive symptoms in adults with treatment-resistant depression. *Psychiatry and Clinical Neurosciences*, *71*(3), 204-211.
- Lewis, J. E., Lantigua, L., Atlas, S., Lopez, J., Mendez, A., **Goldberg, S.**, Medici, S., Konefal, J., Woolger, J., Tiozzo, E., & Aliffe, K. H. (2014). A cross-sectional assessment

to detect type 2 diabetes with endothelial and autonomic nervous system markers using a novel system. *Journal of Diabetes & Metabolic Disorders*, *13*(1), 118.

- **Goldberg, S.,** Gardener, H., Tiozzo, E., Kuen, C. Y., Elkind, M. S., Sacco, R. L., & Rundek, T. (2014). Egg consumption and carotid atherosclerosis in the Northern Manhattan Study. *Atherosclerosis*, *235*(2), 273-280.

Works in progress

- Lewis, J. E., Poles, J., Garretson, E., Tiozzo, E., Goldberg, S., Campbell, C., Simoes, H., Woolger, J. M., Konefal, J. Are Physical Fitness and CRP Related to the Framingham Risk Score in HIV+ Adults? Submitted for publication *American Journal of Public Health* 8/2019, rejected, now for submission to *American Heart Journal.*
- Lewis, J. E., Atlas, S., Abbas, M., Rasul, A., Farooqi, A., Lantigua, L., Lages, L., Michaud, F., Higuera, O., Fiallo, A., Tiozzo, E., Woolger, J. M., Ciraula, S., **Goldberg, S.**, Mendez, A., Rodriguez, A., & Konefal, J. (Submitted for publication). The relationships among immune, cardiometabolic, and endothelial function markers in response to treatment with a polysaccharide in adults with HIV. *Evidence-Based Complementary and Alternative Medicine.*

Contributed (unrefereed) abstracts and/or oral presentations at professional meetings

- **Goldberg, S.**, Aybar, L. and Khalil, A. "Severe Malaria: 260." *Journal Of Hospital Medicine* 5 (2010): 137-138. March 2010 Society of Hospital Medicine Annual Meeting
- Dunn, A., Federman, A., Skamagas, M., Osofsky, M., Boxer, J., Patel, H., and **Goldberg, S**. "The Incidence Of Symptomatic Venous Thromboembolism In The Absence Of Anticoagulant Prophylaxis In Hospitalized General Medical Patients." *Journal of General Internal Medicine* 20 (2005): 104-105. April 2005 Society of General Internal Medicine Annual Meeting

Teaching / Education

- **Ph.D. student mentoring**
  - Kathy Veon, DOM, AP, CCN
    Candidate for Doctorate of Acupuncture and Oriental Medicine, degree anticipated April 2020, Emperor's College of Traditional Oriental Medicine, Santa Monica, CA.
    Title of Capstone Project: *Biological effects of non-native electromagnetic frequencies (nnEMF's) in health and disease patterns. A review of research, findings, and recommendations for patient and practitioner education*

- **Teaching, and tutoring (courses or blocks taught or team-taught)**
  - March 2015, First year medical student Doctoring Course Instructor, University of Miami Miller School of Medicine: "Doctoring in a chronic disease epidemic: Non-pharmacologic strategies to improve health", did one workshop for entire first year class.
  - 2013-2015, Group leader - Evidence Based Integrative Medicine – Taught evidence-based medicine to University of Miami medical students bi-annually in small group session meetings of 10-14 students. Each student presented and critically evaluated a peer reviewed paper in field of integrative medicine. Goals were to teach EBM while discussing integrative approaches.
  - 2007, Instructor for Physical Diagnosis/Introduction to Clinical Medicine course for second year Albert Einstein College of Medicine students, who rotated at Beth Israel Medical Center. Rounded with a group of three students every week who were there to perform a history and physical examinations on one patient per visit. Individual teaching in history taking and physical examination was done at the bedside and feedback on their patient presentations was provided.

- **Resident and fellow teaching and mentoring**
  - Lecturer for house-staff noon conference series at Beth Israel (2006-2011).
  - Taught travel medicine to Infectious Disease Fellows at Beth Israel via bimonthly case presentation/discussion (2009-2010).

- **Other teaching activities**
  - Educational Consultant, Global Alternative Healthcare Project, New York, NY, October 2008 and April 2009. Developed curriculum and taught bi-annual, 2-day clinical tropical medicine course to groups of acupuncturists in preparation for international aid missions.